VISIOSAT®

TM06-SM08
STM46

FIELD STRENGTH METERS
USER MANUAL

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Versions

Version and date of issue	Modified chapter	**Nature of the change**
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2.0 / November 8th 2010	3.1, 3.2.9, 5, 8, 10.1, 10.2, 10.3, 10.4, 12, 16.1, 16.2, 17.7, 20	Lists and setups spreadsheet dimmed. Add setup number in lists. Adding TM06 and SM08 for specific functions and measures. Noise margin. 48Vrms input protection.
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Thank you for purchasing this VISIOSAT product and therefore trusting our company. Our different teams (research department, production, sales department, after-sales service…) are aiming at satisfying your wishes by designing and updating very advanced appliances.

To obtain the best performance from this product please read this manual carefully.

For more information please contact our different services:

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After-sales service	e-mail: sav@visiosat.com
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Web: http://www.visiosat.com

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GARANTEE

Your instrument is guaranteed for one year in parts and work time against any default of manufacture and/or contingencies in the functioning. This guaranty starts at the date of delivery and ends 365 calendar days later.

If the appliance is subject to a guaranty contract, this contract cancels and replaces the above mentioned conditions of guaranty.

This guaranty does not include any fault of use and/or error of handling.

In case of use of the guaranty, the user must send back, with its expenses, the concerned appliance to our factory:

VISIOSAT SAV

ZI de Regourd

46000 CAHORS - France

The accessory items furnished as standard with the appliance (cables, plugs…), consumable items (battery…) and the optional accessory items (bag, case…) are guaranteed for 3 months against any default of manufacture.

The warranty does not apply to LCD, pouch, keypad, etc. Please check our warranty conditions with our sales department. The warranty does not apply when the instrument is shocked.

The factory options in the appliance are guaranteed for the same time as the appliance.

Customer is responsible of shipping back the instrument to the factory. Special care must be taken in the packaging of the instrument to be sure that it will not be damaged during transportation. All necessary insurance must be taken by the customer.

VISIOSAT can reject any instrument damaged.

hat to do in case of malfunction?

In case of malfunction or for any problem of use, please join the technical assistance by VISIOSAT Instruments & Systems.

A technician will take your call in charge and will give you any necessary information to solve your problem.

hat to do in case of crash?

In case of crash of the appliance, please join our after-sales service.

Some advice?

Some technical help required?

VISIOSAT commits itself to help you by phone for the use of your appliance.

Please phone:

+33(0)5 65 35 82 20 Technical help for products

or send an e- mail to: Visiosat@visiosat.com

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1 Important information

Please read cautiously the following instructions before using this appliance

1.1 Special precautions

- Do not use the product for any purpose else that scheduled.
- Use the battery charger provided to prevent any damage to the appliance and guarantee its measurement characteristics.
- Do not use in a wet environment.
- Do not use in an explosive environment.
- Only a qualified personal should be allowed to work on the appliance in case of failure or for maintenance. In such a case, it is necessary to use VISIOSAT spare parts.
- Do not open the appliance: risk of electrical shock.
- You must use only the provided BNC/F convertor furnished with your appliance. Using any other convertor may damage your appliance and invalidates the guarantee.

1.2 Security instructions

For a good use of the appliance, you must respect the security and use instructions as described in this manual.

Some specific warnings are specified all along this manual.

In case of need, warning symbols are stamped in the appliance:

1.3 Symbols and definitions

Symbols that appear in this user manual:

Remark: important information

Symbols that appear on the appliance:

Caution: Refer to the user manual. Risk of damage to any material connected to the instrument or to the instrument itself.

Grounding: Easily reached parts linked to the grounding.

Product to recycle.

1.4 Conformity and restrictions of the appliance

See chapter “CE Declaration”.

2 Quick start

Important keys:

Toolbox: For the set-up of the satellite remote supply

Spectrum: For fast identification of a signal

Measurement: For a fine adjustment of the parameters

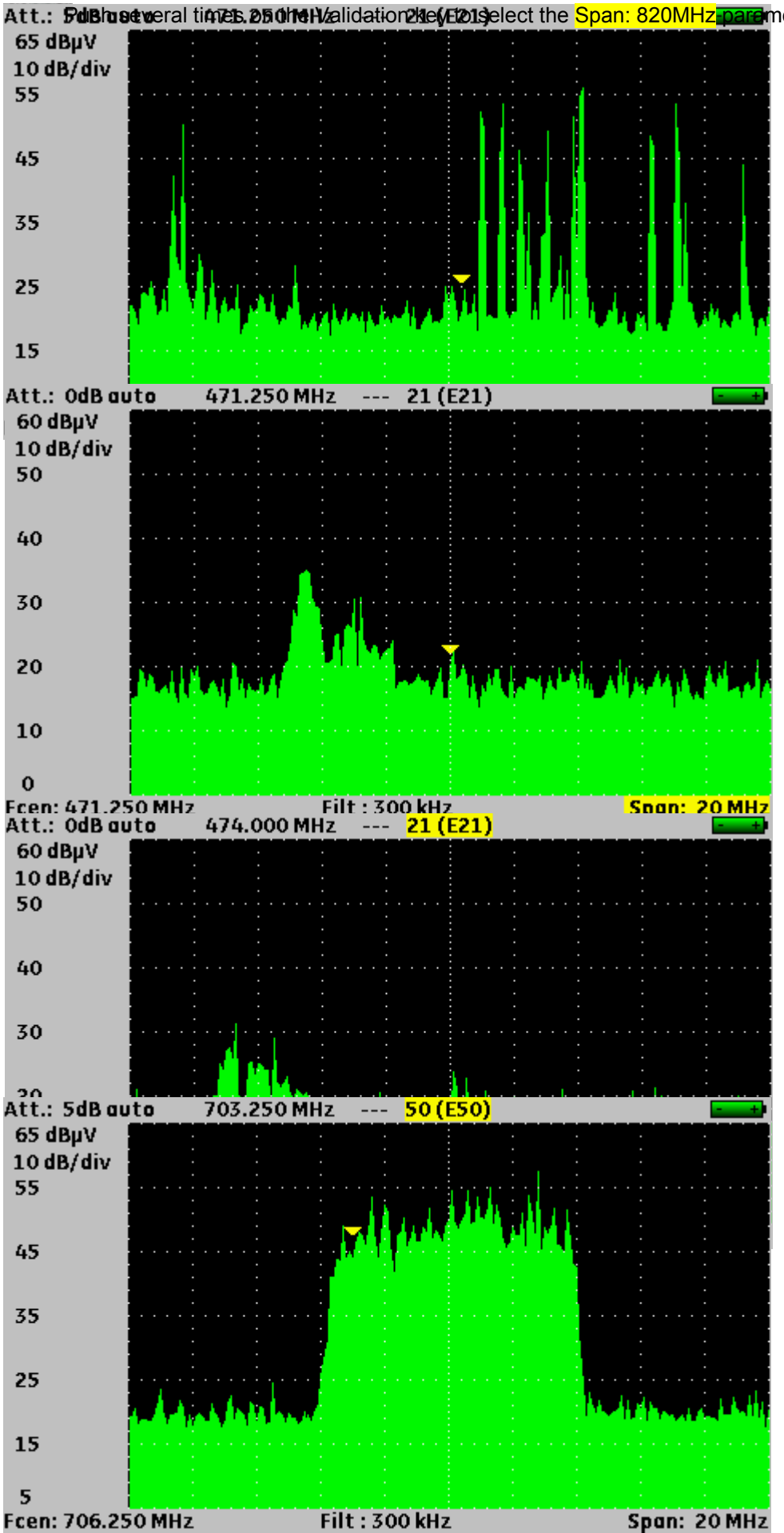
TV: For the complete validation of the reception

Validation: To select a value to modify

KNOB: To adjust this value

2.1 Catching of the terrestrial signal

Push the Spectrum key



Push several times on the Validation key to select the Span: 820MHz parameter

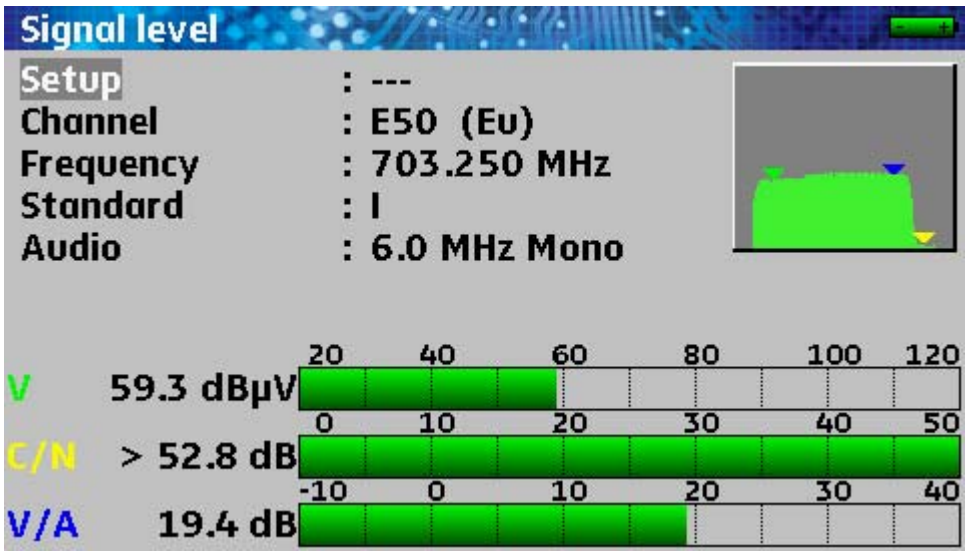
Rotate the knob to display Span: 20 MHz

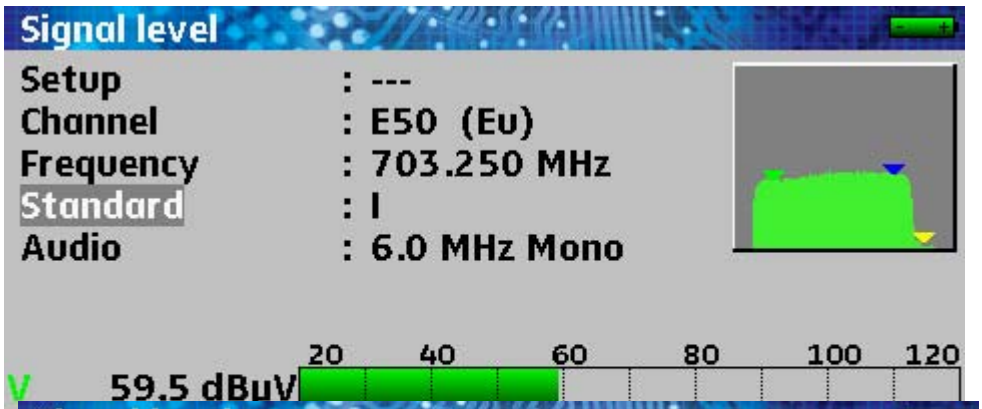
Push several times on the Validation key to select the Channel 21 (E21) parameter

Rotate the knob to get an active channel in the 50 (E50) screen

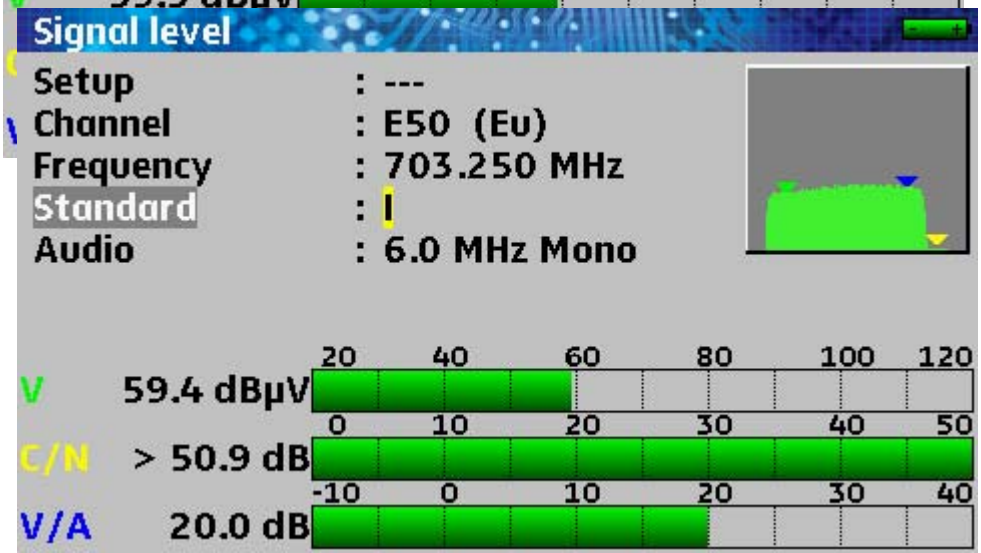
2.2 Adjustment of the parameters in the Measurement screen

Push the MEASUREMENT key

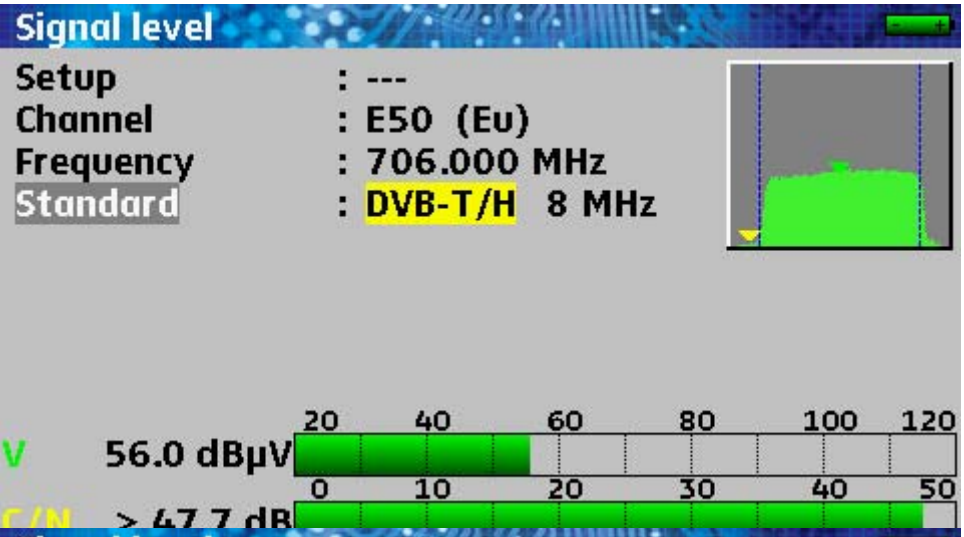




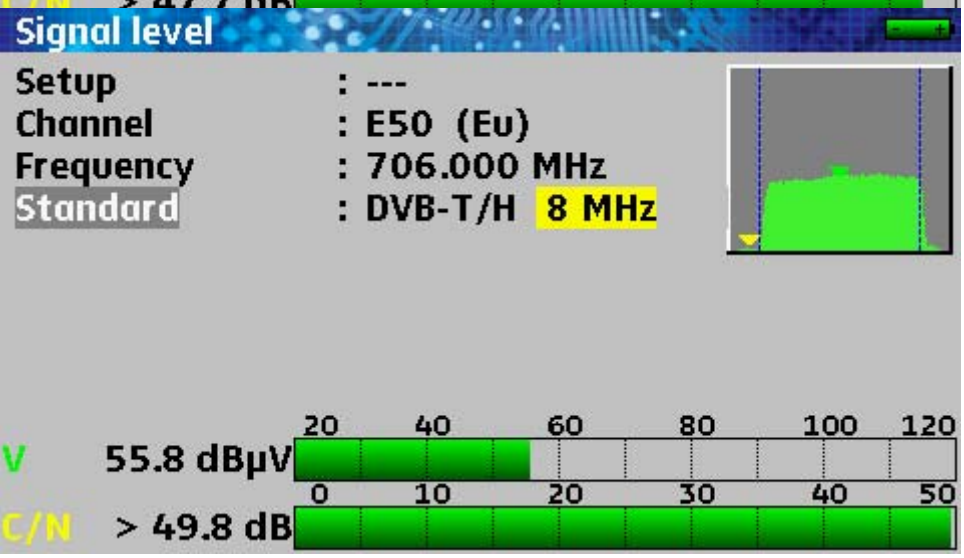
Rotate the knob to select the standard



Push the Validation key to select



Rotate the knob to modify the standard


Signal level
Setup : ---
Channel : E50 (Eu)
Frequency : 706.000 MHz
Standard : DVB-T/H 8 MHz
20 40 60 80 100 120
V 55.8 dBµV
0 10 20 30 40 50
C/N > 49.8 dB

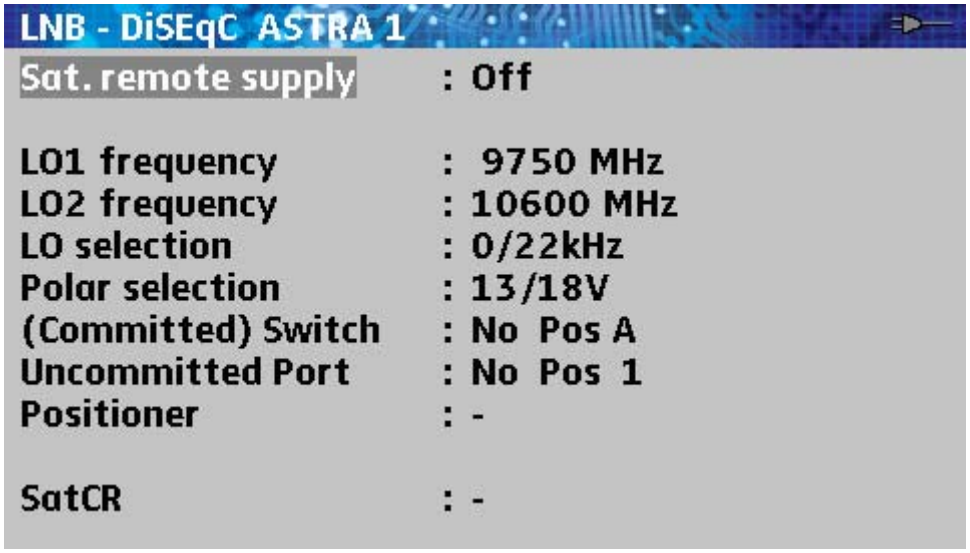
Push the Validation key to select the bandwidth

Rotate the knob for modification if required

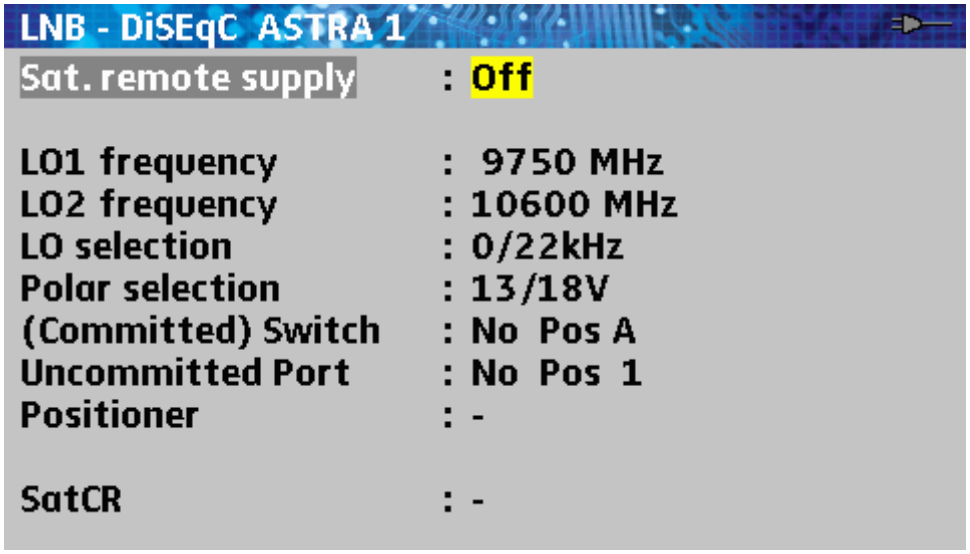
2.3 Validation on TV

Push on the TV key

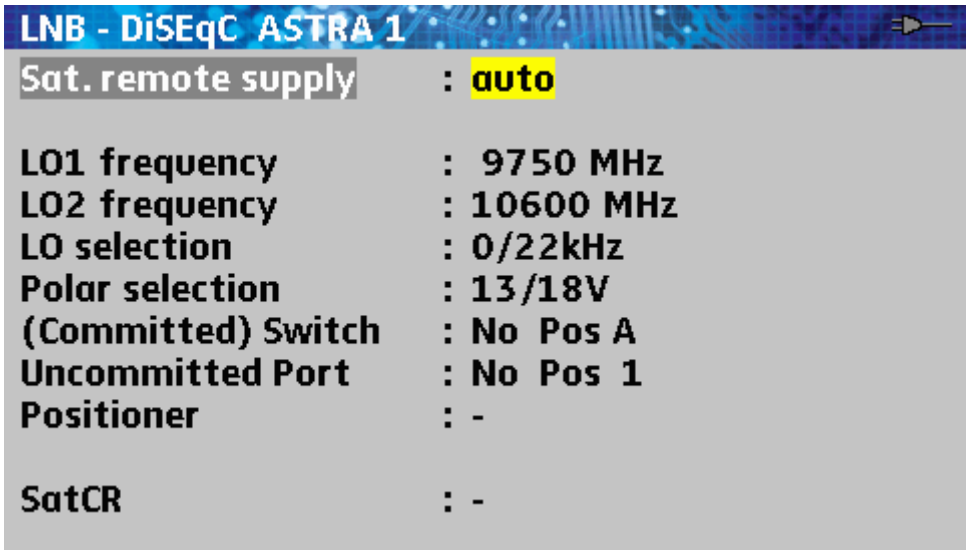
2.4 Set-up of the remote supply


LNB - DiSEqC ASTRA 1
Sat. remote supply : Off
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : -

Multiple push on the Toolbox key give you access to the Remote supply screen


LNB - DiSEqC ASTRA 1
Sat. remote supply : Off
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : -

Push the Validation key to select the Remote supply parameter


LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : -

Rotate the knob to display On or auto

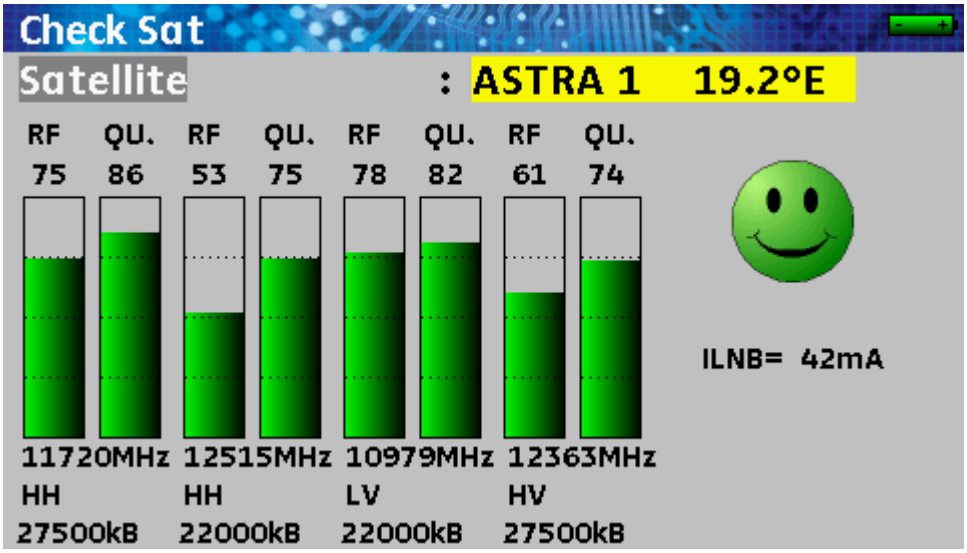
Push the Validation key

2.5 Dish adjustment

1/ Connect the dish to the appliance.

2/ Set up the remote supply (see Set-up of the remote supply)

3/ Push twice on the **Spectrum** key to access the pointing mode.
(The appliance already has a list of satellites included)


Check Sat
Satellite : ASTRA 1 19.2°E
RF QU. RF QU. RF QU. RF QU.
75 86 53 75 78 82 61 74
ILNB= 42mA
11720MHz 12515MHz 10979MHz 12363MHz
HH HH LV HV
27500kB 22000kB 22000kB 27500kB

4/ Choose the satellite to plot (see Pointing)

5/ Slowly direct the dish until you hear the locking signal and get the best quality.

No transponder found → red smiley

Medium reception quality (< 50%) → orange smiley

Good reception quality (> 50%) → green smiley

Remember: transponder = satellite channel

	Caution: **To accurately identify a satellite, you have to « catch » it on all 4 transponders (Quality > 0)** **However, some transponders are regularly modified. Consult the frequency plan of the satellite if the transponder does not seem to work.** **Some switches or LNB only work with DiSEqC commands. In this case, set the band (OL) and the polarization on DiSEqC at the LNB-DiSEqC configuration page (Caution: the pointing is slower when you use the DiSEqC command).**

For any additional information, our technical support is available:

Tél. +33(0)5 65 35 82 20

E-mail : visiosat@visiosat.com

3 Presentation

3.1 General

The field measurement appliances **TM06, SM08, and STM46** are portable appliances designed for the installation and the maintenance of any device for the broadcasting and reception of analogical, terrestrial digital, satellite television or cable network.

The frequency band ranges **from 45MHz to 2150MHz**; they allow accurate measurements on all standards of analogical televisions, the FM carrier waves and the various digital standards NICAM, DVB-T/H, DVB-S, DSS and DVB-S2.

They make **Level** measurements as average measurements, peak measurements or power according to the selected standard, on the video carrier wave and the audio carrier waves if they exist.

In **Measurement Plan** mode, they scan up to 50 setups simultaneously and compare them to decision thresholds (min. / max.)

With their effective measurement of **Error rate** (various BER, MER); they enable the complete validation of the digital transmissions DVB-T/H, DVB-S, DSS, and DVB-S2.

The graphic display of the **Constellation** in DVB-T/H, DVB-S, DSS and DVB-S2 and the display of echoes in DVB-T/H allow the fulfilment of this analysis.

The quick and accurate **Spectrum** analysis shows the interference waves...

You can visualize the unencrypted image of **terrestrial digital or satellite TV** in SD and HD.
(STM46 model: visualization program TV MPEG2 + MPEG4)

You can hear digital sound with an incorporated loudspeaker.

The large amount of FLASH memory allows the storage of many measurements and spectrum curves.

Designed for a use on field, they are compact (less than 1.5kg, battery included), unattended (pack battery and quick charger), equipped with a back lighted colour LCD display for a better visibility.

The capabilities of your appliance are summed-up below.

TM06 model:

- **Compatible with terrestrial signal**
- **Analogical and digital measurements**
- **DVB-T/H**
- **unencrypted SD/HD digital images and sounds**
- **5, 13, 18 and 24Volt remote supply**

SM08 model:

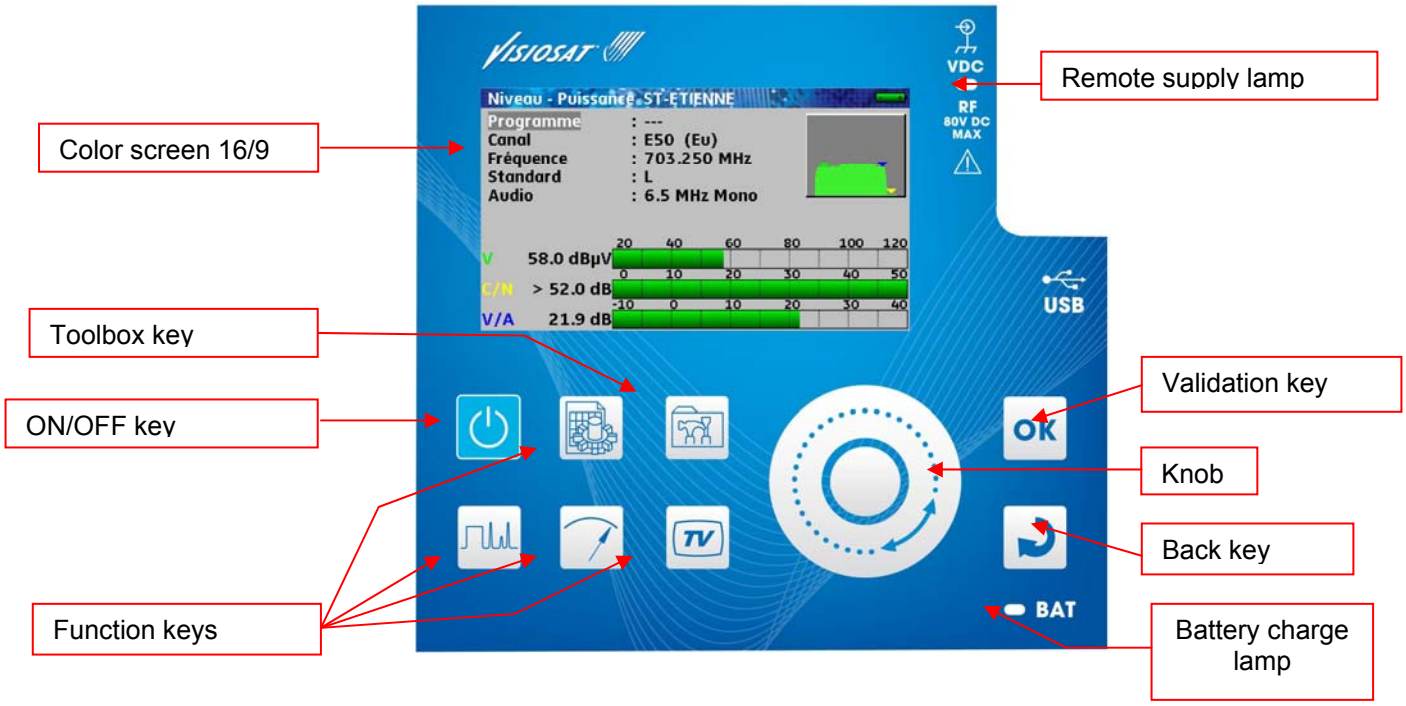
- **Satellite compatible**
- **Analogical and digital measurements**
- **DVB-S, DSS and DVB-S2**
- **unencrypted SD/HD digital images and sounds**
- **13/18Volt remote supply, ToneBurst, DiSEqC 1.2 and SatCR**

STM46 model:

- **Compatible with terrestrial and satellite signal**
- **Analogical and digital measurements**
- **DVB-T/H, DVB-S, DSS and DVB-S2**
- **5, 13, 18 and 24Volt terrestrial remote supply**
- **13/18Volt satellite remote supply, ToneBurst, DiSEqC 1.2 and SatCR**
- **unencrypted SD/HD MPEG2+MPEG4 digital images and sounds**

3.2 Description

3.2.1 Front side



3.2.2 ON/OFF key

This key turns the appliance on and off.

The appliance will stop automatically after ten minutes on the splash page.

If the appliance gets locked, push it about ten seconds to stop it.

3.2.3 Function keys

PARAMETERS: selection and change of the measurement lists; pushing it twice gives you access to the library of the 1000 software listings available and to their modification

SPECTRUM: spectrum analysis; pushing it twice gives you access to the satellite adjustment mode; pushing it three times gives you access to the display of the identification of the satellite (according to the type of the appliance).

MEASUREMENT: level measurement (peak, average and power)

Pushing twice: measurement of BER and MER (according to the selected standard)

Pushing three times: display of the satellite constellation (according to the selected standard)

Pushing four times: display of the echoes (according to the selected standard and the type of the appliance)

Pushing five times: display of the measurement plan

TV: display of the digital image; the knob enables you to set the sound volume

Pushing twice: display of the list of services

Pushing three times: display of the pending setup

3.2.4 Toolbox key

According to the context, this key gives you access to secondary functions of the appliance.

If no parameter has been selected (yellow colour) and a measurement or a spectrum is displayed, it gives you access to the storage of this measurement or this spectrum.

Pushing it twice gives you access to the remote supply.

Pushing it three times gives you access to the configuration of the appliance

If a parameter has been selected, this key can give you access to a list of selections.

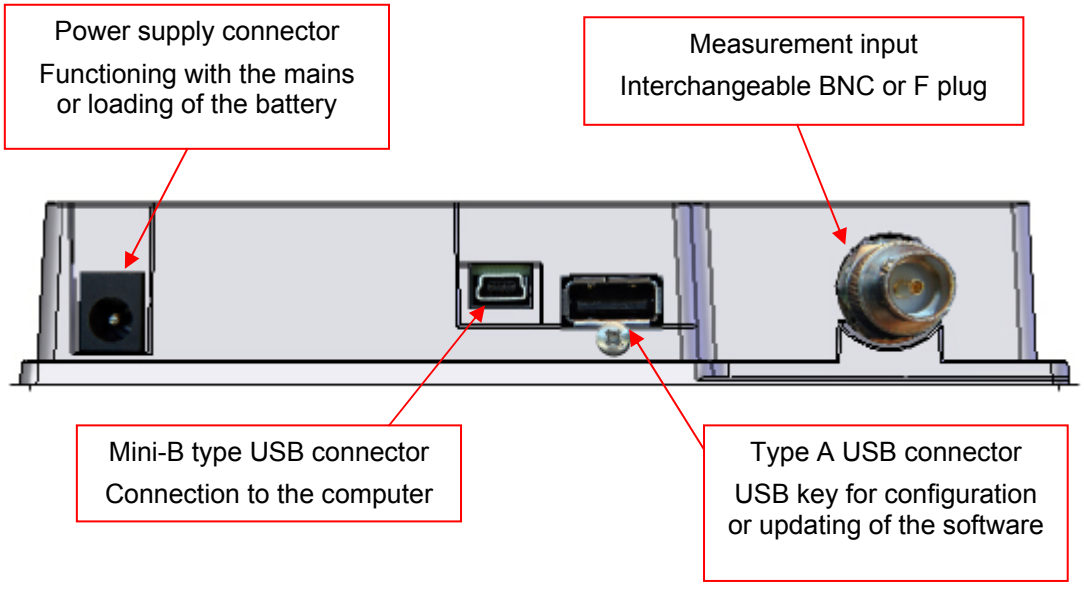
3.2.5 Validation and Back keys

Validation: this key enables the selection of parameters and the validation of your choice

Back: this key enables the de-selection of parameters, the cancellation of a choice and the closing of a list.

3.2.6 Connectors

All connectors are located together on the right side of the appliance.

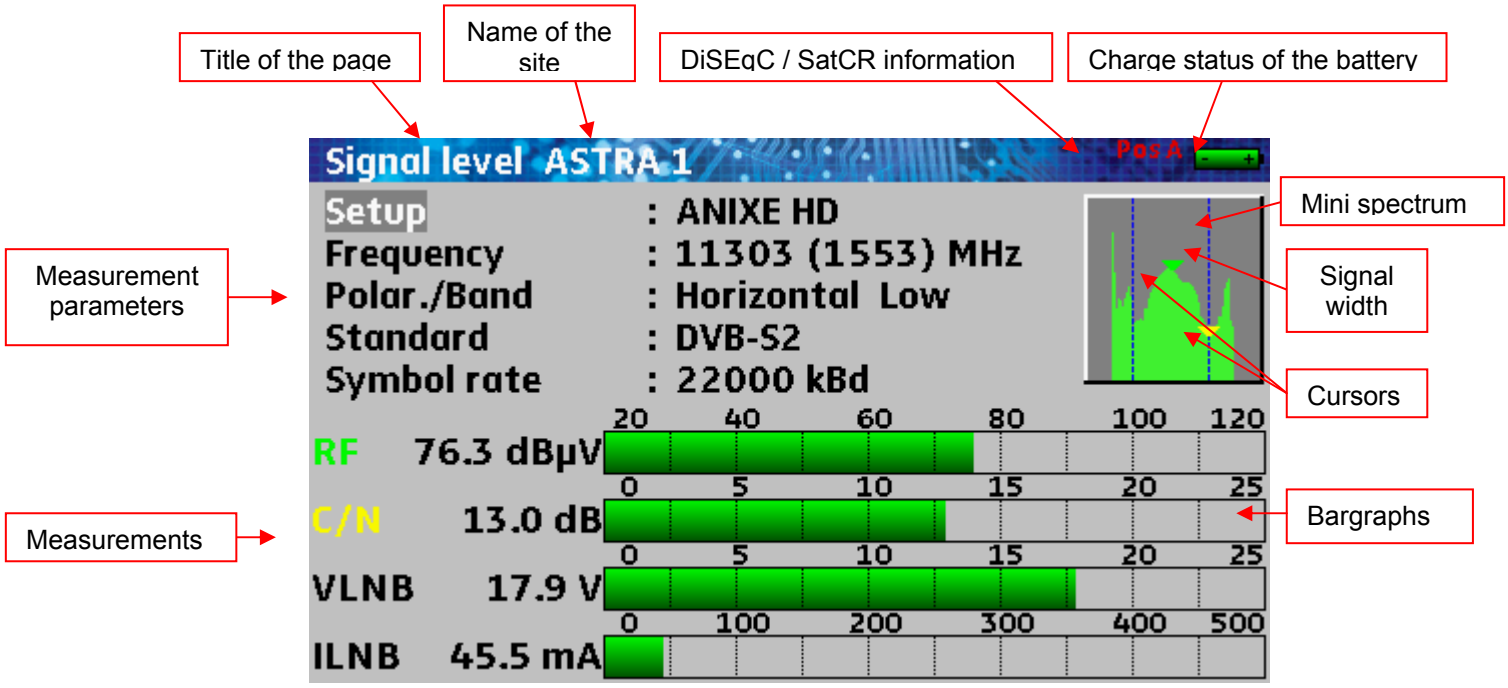

Power supply connector
Functioning with the mains or loading of the battery
Measurement input
Interchangeable BNC or F plug
Mini-B type USB connector
Connection to the computer
Type A USB connector
USB key for configuration or updating of the software

BNC or F plug

3.2.7 Contents of the screen

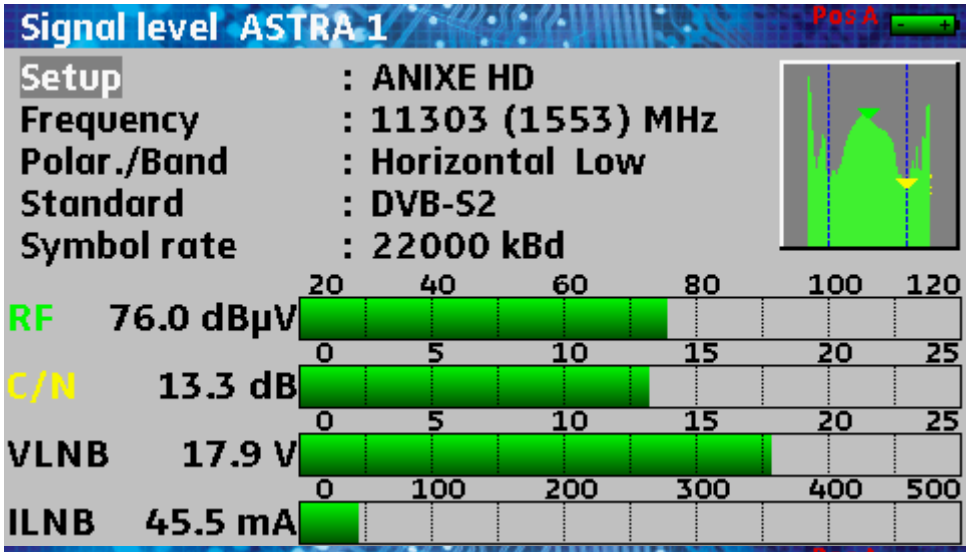
All useful information is gathered on the same screen.

Example: Measurement of the level-power of the satellite.



3.2.8 Man-machine interface

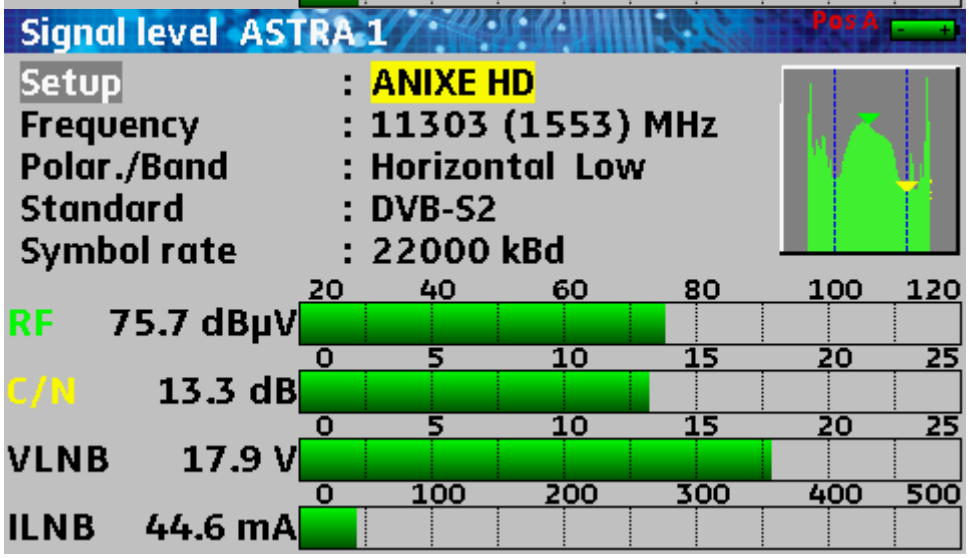
3.2.8.1 Modification of a parameter with the knob



Push the Measurement key

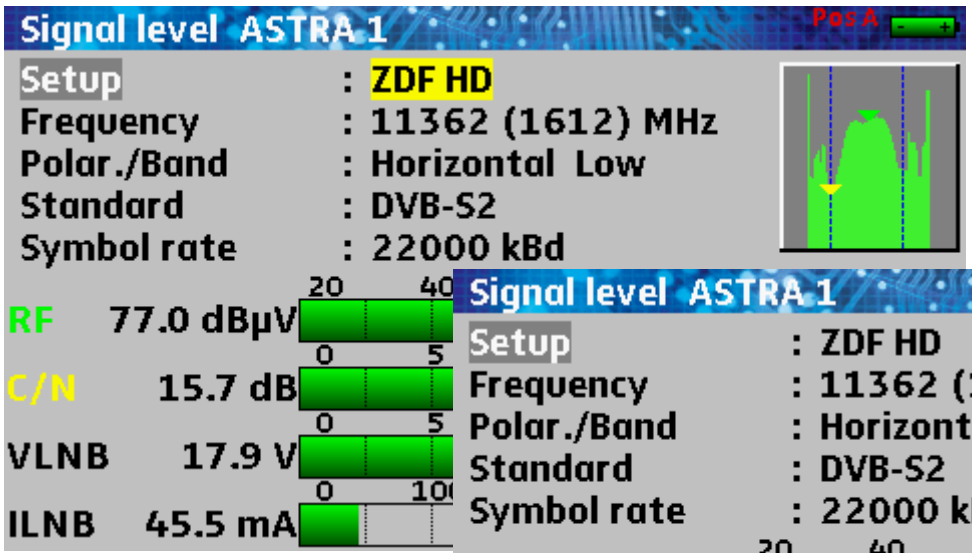
The Measurement page appears

With the knob, select the Setup line (white on grey)



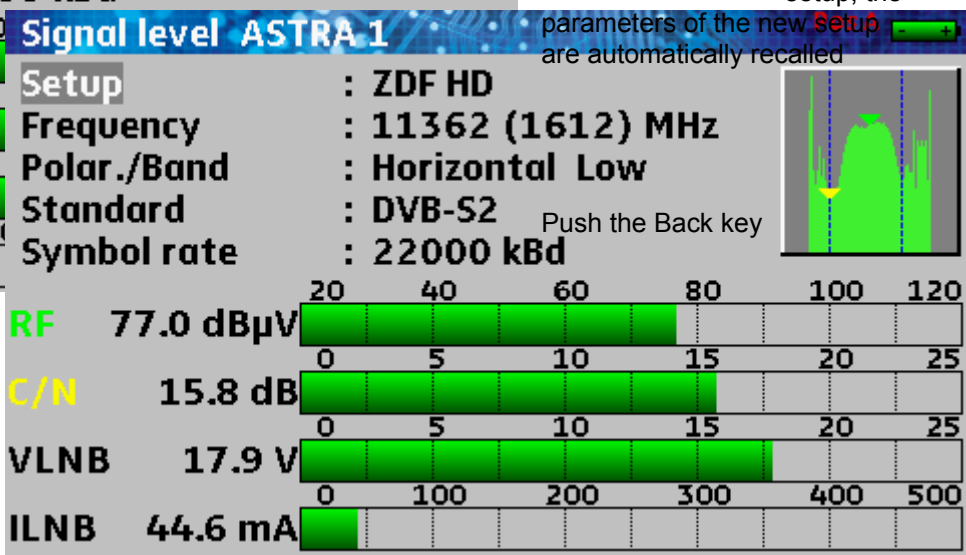
Push the Validation key

The name of the setup is selected (black on yellow): now you can change it



Rotate the knob to change the name of the setup; the parameters of the new setup are automatically recalled

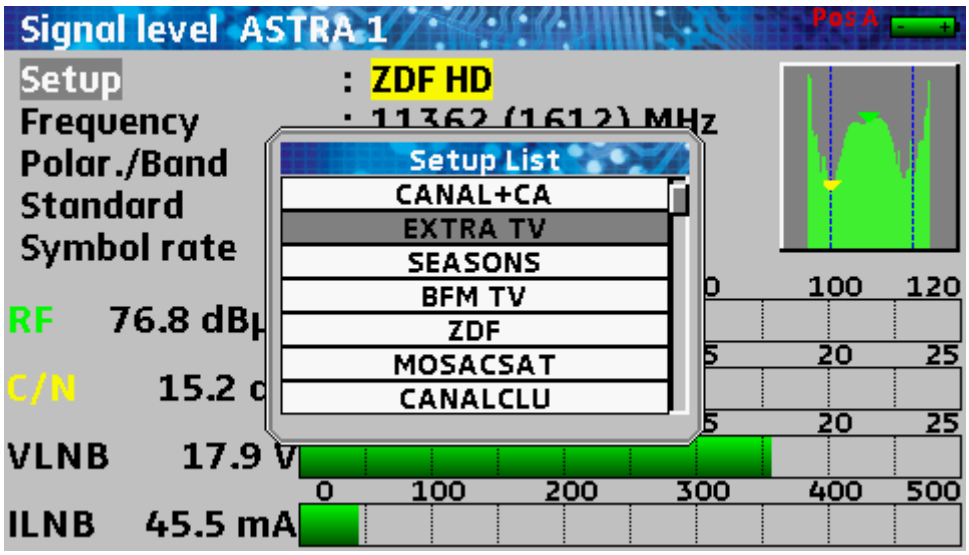
The name of the setup is no more selected; turning the knob will



Push the Back key

change the line but no more the setup

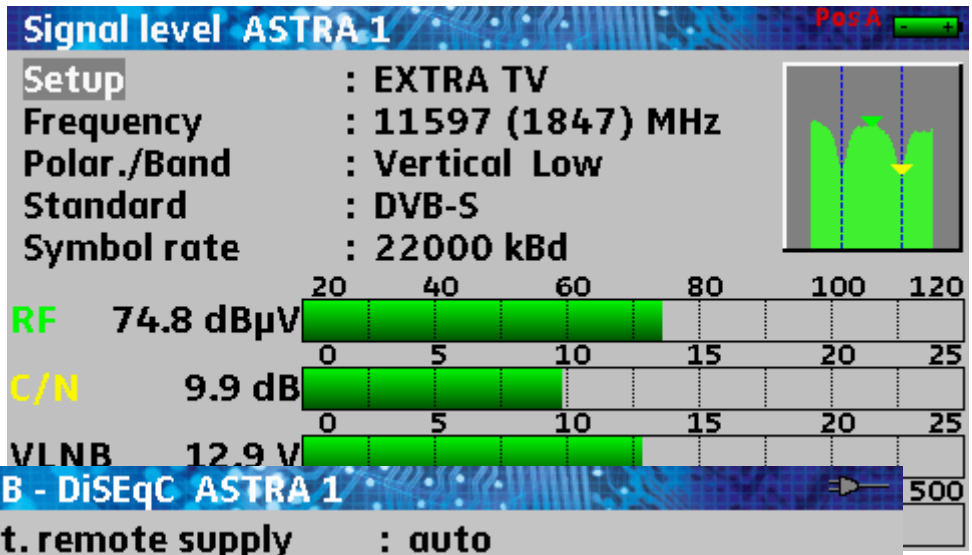
3.2.8.2 Modification of a parameter with a list



Push the Validation key,

then push the Toolbox key

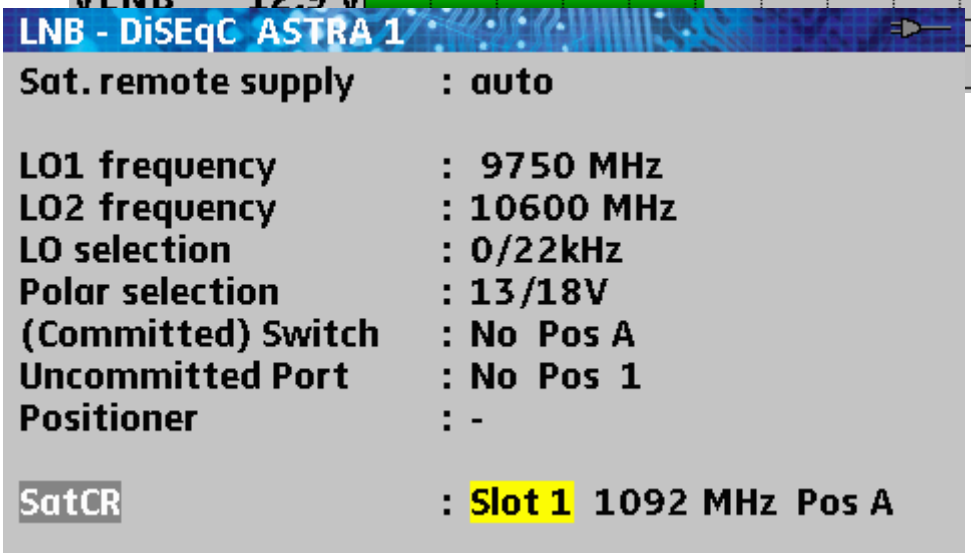
The list of the available setups appears.



The knob enables you to move along the list

Push the Validation key

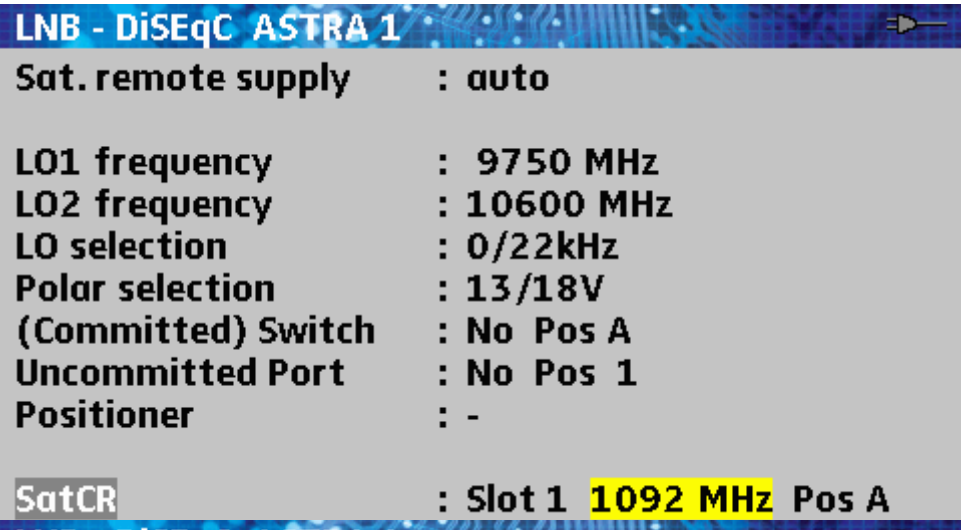
The setup is recalled, the name of the setup is no more selected


LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : Slot 1 1092 MHz Pos A

3.2.8.3 Line with

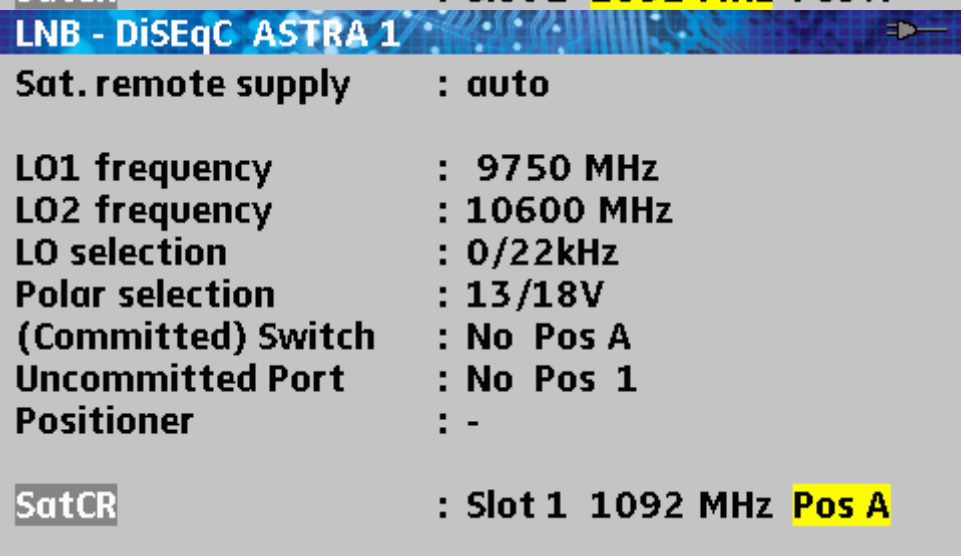
Push the Validation key

The first parameter is selected; you can change it with the knob.


LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : Slot 1 1092 MHz Pos A

Push the Validation key once again

The second parameter is selected; you can change it with the knob.

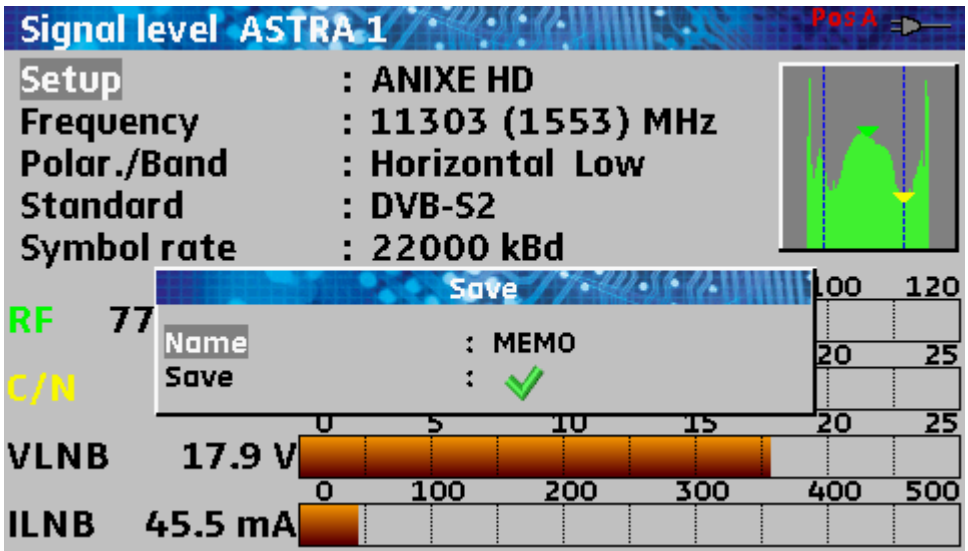

LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : Slot 1 1092 MHz Pos A

Push the Validation key for the third time

The third parameter is selected; you can change it with the knob.

Push the Validation key for the fourth time; no parameter is selected any more

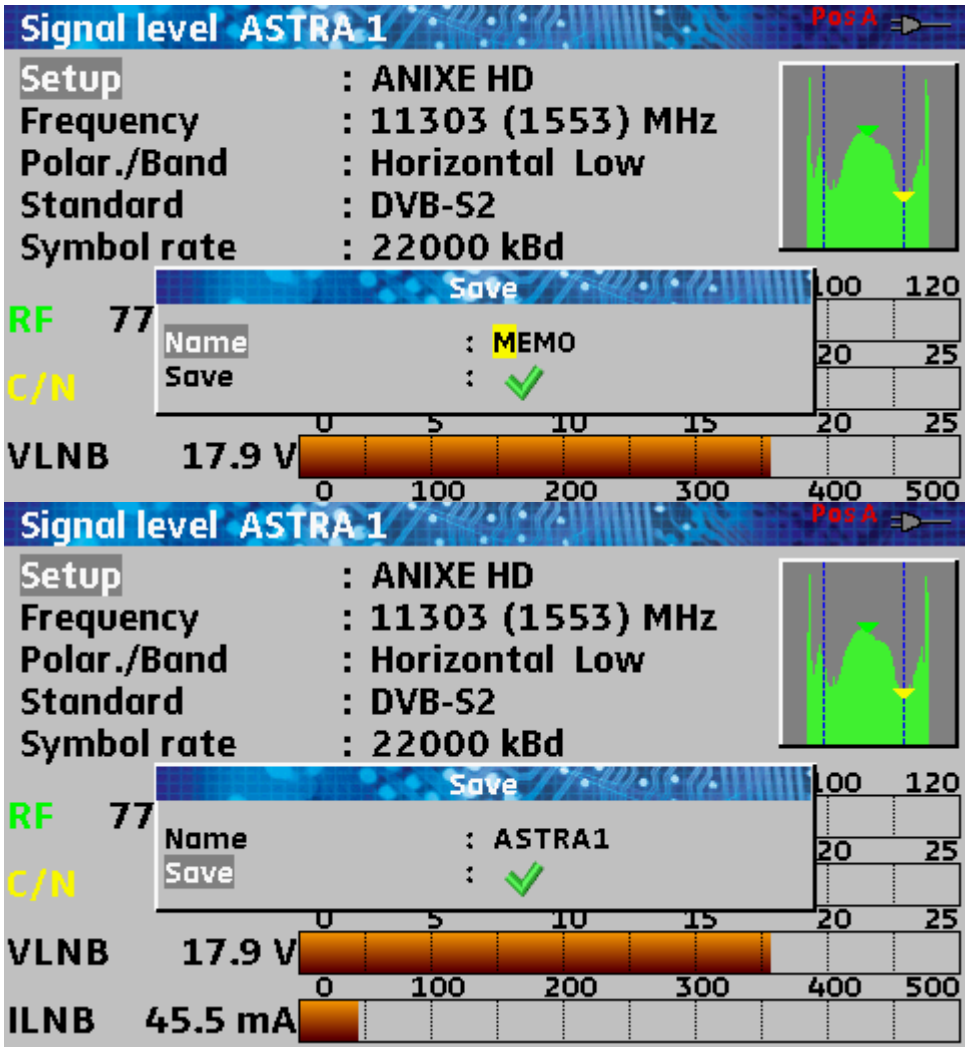
Pushing the Back key deselects the active parameter at any time



3.2.8.4 Entering a name

Push the Toolbox key

The Save window appears.



Push the Validation key

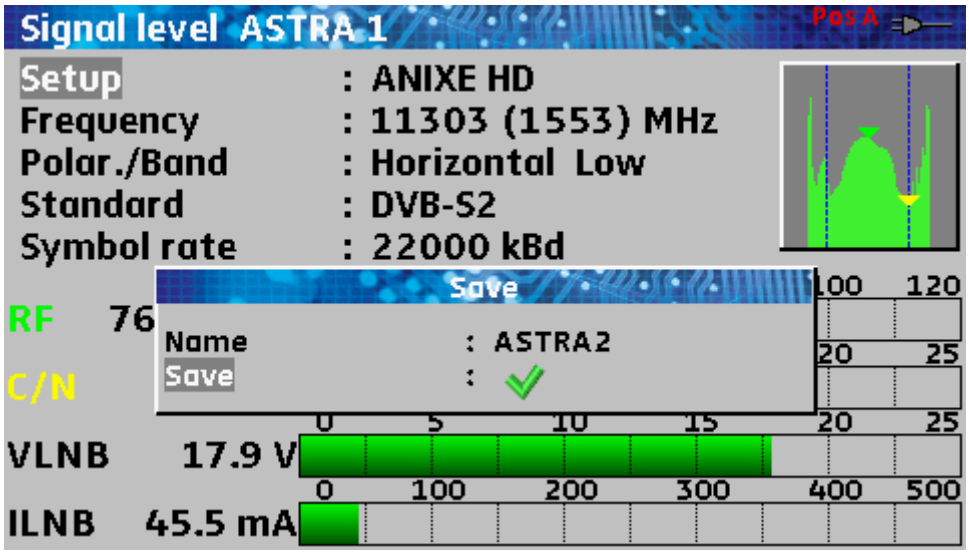
The first character of the name is selected

Turning the knob makes you change the character

Pushing the Validation key leads to the following character

After eight characters, you can save the name by pushing the Validation key.

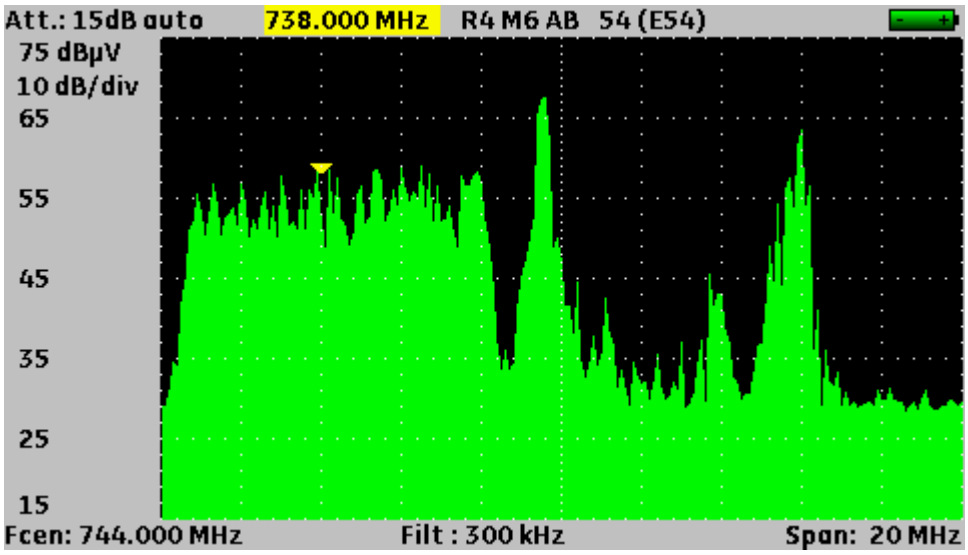
Pushing the Back key cancels the save procedure at any time.



If the end of the name is a series of numbers, they will be automatically incremented at the next save.

The last used name is saved even at the shutdown of the appliance.

3.2.8.5 Specific case of the spectrum analyzer



Pushing the Validation or Back key leads you to the next/previous parameter

Frequency of the cursor

Setup

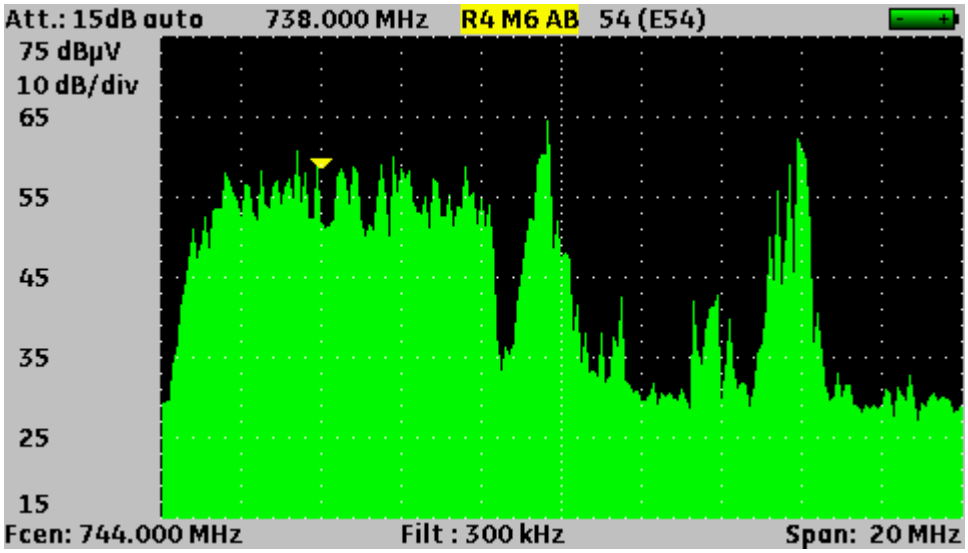
Channel or polarization

Reference level

Number of dB/division

Central frequency

Span width



You can change the selected parameter with the knob (black on yellow).

3.2.9 List of measurements and setups

In order to make the call of information easier on the field, the appliance uses 20 lists of measurements, 50 lines each, 1000 setups each.

A setup corresponds with a terrestrial, cable or satellite emission.

A list of measurements corresponds with a specific installation: presence of several dishes, of various switches…

The same setup can be used in several measurement lists.

An installation can use two dishes:

ASTRA 19.2 in DiSEqC position A

HOT BIRD 13 in DiSEqC position B

Another installation can use three dishes:

ATLANTIC BIRD 3 in DiSEqC position A

ASTRA 1 in DiSEqC position B

HOT BIRD in DiSEqC position C

The same setup can be used several times in the same list of measurements:

ZDF SatCR slot 0

ZDF SatCR slot 1

ZDF SatCR slot 2

ZDF SatCR slot 3…

If a parameter of a setup is changed, by example a change of the bandwidth or a change from DVB-S to DVB-S2, only the setup in the library has to be updated.

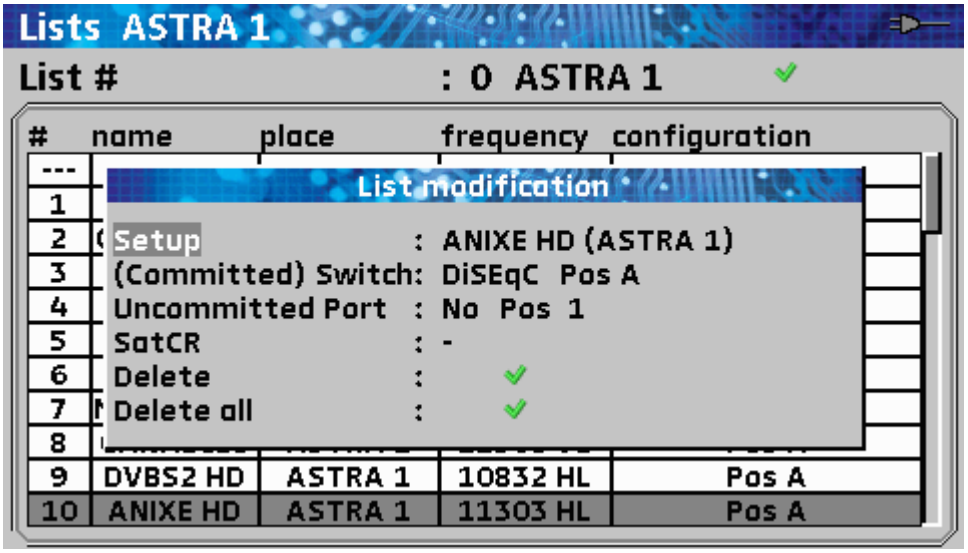
	You can create these lists and setups with a computer on spreadsheet software and upload them into the appliance thanks to an USB.key.

A measurement list includes:

- the name of the list on 10 characters
- the lower frequency of the LNB (OL1)
- the higher frequency of the LNB (OL2)
- the selection mode lower band / higher band of the LNB
- the selection mode of the polarisation
- the presence and the position number of the position finder (for motorized dishes)
- 50 lines, each including:
    - a setup number corresponding with the list of setups
    - the presence and the functioning mode of a switch of the committed type
    - the position of the switch of the committed type
    - the presence and the functioning mode of a switch of the uncommitted type
    - the position of the switch of the uncommitted type
    - the presence of a SatCR item
    - the number of the SatCR slot

- the position of the SatCR switch.

Some of these parameters are specific to the satellite band and have no influence on the terrestrial and cable modes.


Lists ASTRA 1
List # : 0 ASTRA 1
name place frequency configuration
List modification
Setup : ANIXE HD (ASTRA 1)
(Committed) Switch: DiSEqC Pos A
Uncommitted Port : No Pos 1
SatCR : -
Delete :
Delete all :
9 DVBS2 HD ASTRA 1 10832 HL Pos A
10 ANIXE HD ASTRA 1 11303 HL Pos A

Push the Parameters key

Rotate the knob to select a line in the list

Push the Validation key to open the modification page

Display of a list of measurements in spreadsheet software:

	A	B	C	D	E	F	G	H	I
1	Nom de la liste / List name	ASTRA1+HOT							
2	Fréquence OL1 / LO1 frequency	9750							
3	Fréquence OL2 / LO2 frequency	10600							
4	Sélection OL / LO setup	DiSEqC							
5	Sélection polarisation / Polarization setup	DiSEqC							
6	Positionneur / Positioner								
7									
8		Numéro de programme Setup number	Switch committed Committed switch	Position Switch committed Committed switch position	Switch uncommited Uncommitted switch	Position switch uncommited Uncommitted switch position	Activation SatCR SatCR enabled	Numéro de slot Slot number	Switch SatCR SatCR switch
9	0								
10	1	1	DiSEqC	Pos A					
11	2	2	DiSEqC	Pos A					
12	3	3	DiSEqC	Pos A					
13	4	4	DiSEqC	Pos A					
14	5	5	DiSEqC	Pos A					
15	6	6	DiSEqC	Pos A					
16	7	7	DiSEqC	Pos A					
17	8	8	DiSEqC	Pos A					
18	9	9	DiSEqC	Pos A					
19	10	10	DiSEqC	Pos A					
20	11	11	DiSEqC	Pos A					
21	12								
22	13	18	DiSEqC	Pos B					
23	14	19	DiSEqC	Pos B					
24	15	20	DiSEqC	Pos B					
25	16	21	DiSEqC	Pos B					
26	17	22	DiSEqC	Pos B					
27	18	23	DiSEqC	Pos B					
28	19	24	DiSEqC	Pos B					
29	20	25	DiSEqC	Pos B					

Prog Lst00 Lst01 Lst02 Lst03 Lst04 Lst05 Lst06 Lst07 Lst08 Lst09 Lst10 Lst11 Lst12 Lst13 Lst14 Lst15 Lst16 Lst17 Lst18 Lst19

Prêt Moyenne : 10175 Nb (non vides) : 4 Somme : 20350 100 %

A setup is made of:

- a setup name in 8 characters
- a site name in 10 characters
- a frequency
- a channel number for terrestrial band or cable
- a frequency plan for terrestrial band or cable
- a vertical or horizontal polarisation for satellite band
- a lower and higher LNB band for satellite band
- a standard
- an analogical audio mode mono/stereo/NICAM for terrestrial band or cable
- a bandwidth 5, 6, 7 or 8 MHz in DVB-T
- a symbol output in DVB-S, DVB-S2 or DSS
- a value for the guard interval in DVB-T
- the inversion or not of the spectrum in DVB-T

A few parameters have no influence according to the terrestrial, cable or satellite band or according to the standard.

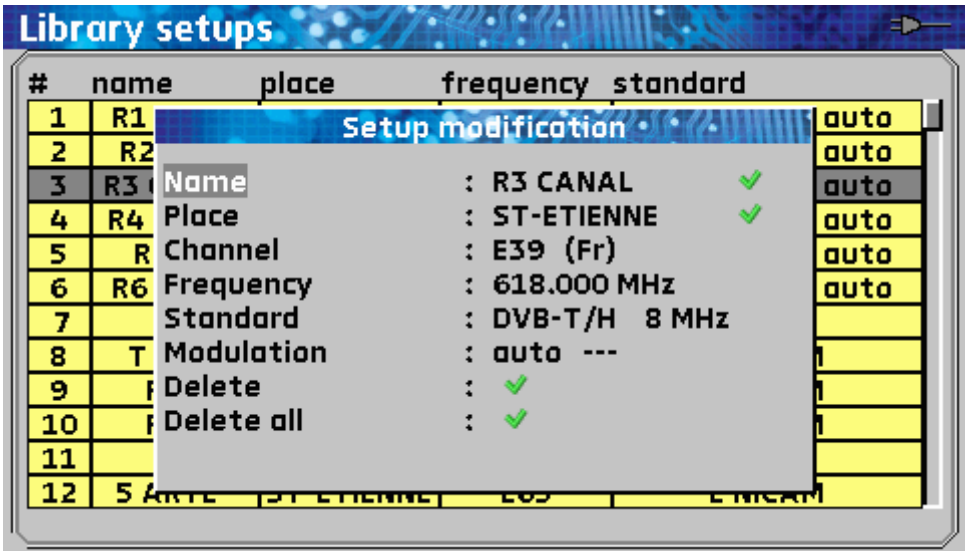
The name of the site allows you to distinguish two different emitters, ex. TF1 Fourvière and TF1 Chambéry.

Frequency and channel number are equivalent: valid channel numbers take priority over frequencies.

The frequency plan parameter associated with the setup enable users close to boundaries to keep on using their channel numbers.

	Selecting a List on the **Measurement Lists** page calls back automatically all information assigned to this list.

	Selecting a **Setup** on one of these measurement pages calls back automatically all information assigned to this setup.



Push twice on the Parameters key

Rotate the knob to select a setup in the list

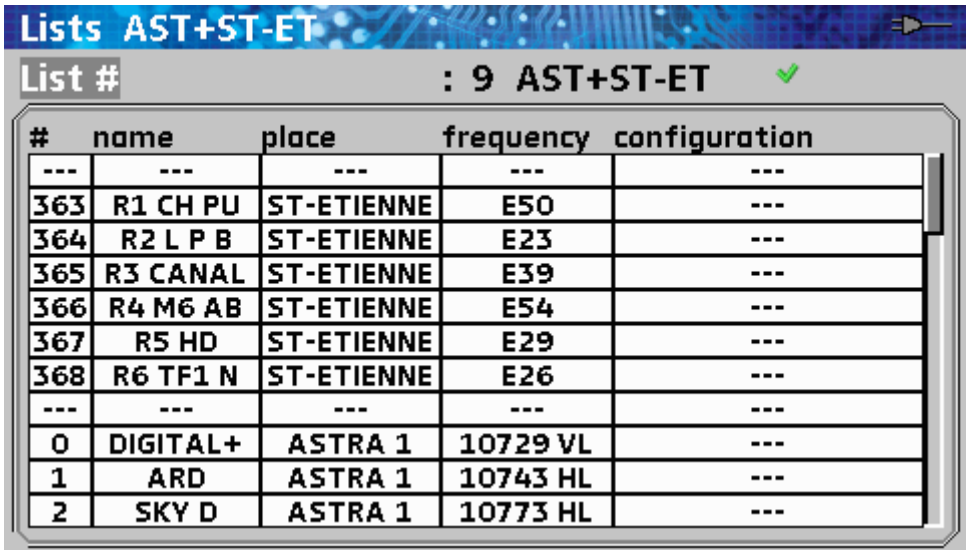
Push the Validation key to open the modification page

Display of a list of setups in spreadsheet software:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		Nom du programme Setup name	Nom du site Place name	Fréquence Frequency	N° de canal Channel #	Plan de fréquences Frequencies map	Polarisation Polarization	Bande LNB LNB band	Standard	Mode audio Audio mode	Constellation	Largeur de bande Bandwidth	Débit symbole Symbol rate	Intervalle de garde Guard interval	Inversion du spectre Spectrum inversion
2	0	DIGITAL+	ASTRA 1	10729,000			V		DVB-S2				22000		
3	1	ARD	ASTRA 1	10743,000			H		DVB-S				22000		
4	2	SKY D	ASTRA 1	10773,000			H		DVB-S2				22000		
5	3	DIGITAL+	ASTRA 1	10788,000			V		DVB-S				22000		
6	4	DIGITAL+	ASTRA 1	10817,000			V		DVB-S2				22000		
7	5	ANIXE HD	ASTRA 1	10832,000			H		DVB-S2				22000		
8	6	DIGITAL+	ASTRA 1	10847,000			V		DVB-S				22000		
9	7	TVP HD	ASTRA 1	10861,000			H		DVB-S				22000		
10	8	DIGITAL+	ASTRA 1	10876,000			V		DVB-S				22000		
11	9	UPC	ASTRA 1	10920,000			H		DVB-S				22000		
12	10	DIGITAL+	ASTRA 1	10979,000			V		DVB-S				22000		
13	11	SKY D	ASTRA 1	11023,000			H		DVB-S2				22000		
14	12	DIGITAL+	ASTRA 1	11038,000			V		DVB-S				22000		
15	13	DIGITAL+	ASTRA 1	11097,000			V		DVB-S				22000		
16	14	DIGITAL+	ASTRA 1	11156,000			V		DVB-S				22000		
17	15	ORANGE	ASTRA 1	11170,000			H		DVB-S2				22000		
18	16	ORF	ASTRA 1	11302,000			H		DVB-S2				22000		
19	17	DIGITAL+	ASTRA 1	11317,000			V		DVB-S				22000		
20	18	DASERSTE	ASTRA 1	11361,000			H		DVB-S2				22000		
21	19	DIGITAL+	ASTRA 1	11435,000			V		DVB-S2				22000		
22	20	HD+	ASTRA 1	11464,000			H		DVB-S2				22000		
23	21	CANALSAT	ASTRA 1	11479,000			V		DVB-S				22000		
24	22	GLOBECAS	ASTRA 1	11508,000			V		DVB-S				22000		
25	23	GLOBECAS	ASTRA 1	11538,000			V		DVB-S				22000		
26	24	CANALSAT	ASTRA 1	11567,000			V		DVB-S2				22000		
27	25	ASTRA	ASTRA 1	11597,000			V		DVB-S				22000		
28	26	DIGITAL+	ASTRA 1	11626,000			V		DVB-S2				22000		
29	27	UPC	ASTRA 1	11670,000			H		DVB-S				22000		
30	28	DIGITAL+	ASTRA 1	11685,000			V		DVB-S				22000		
31	29	SKY D	ASTRA 1	11719,000			H		DVB-S				27500		
32	30	VIACOM	ASTRA 1	11739,000			V		DVB-S				27500		
33	31	SKY D	ASTRA 1	11758,000			H		DVB-S				27500		
34	32	CANALSAT	ASTRA 1	11778,000			V		DVB-S				27500		
35	33	SKY D	ASTRA 1	11797,000			H		DVB-S				27500		
36	34	CANALSAT	ASTRA 1	11817,000			V		DVB-S				27500		
37	35	ARD	ASTRA 1	11836,000			H		DVB-S				27500		
38	36	CANALSAT	ASTRA 1	11856,000			V		DVB-S				27500		
39	37	SKY D	ASTRA 1	11875,000			H		DVB-S				27500		
40	38	CANALSAT	ASTRA 1	11895,000			V		DVB-S				27500		
41	39	SKY D	ASTRA 1	11914,000			H		DVB-S2				27500		
42	40	CANALSAT	ASTRA 1	11934,000			V		DVB-S				27500		

Prog Lst00 Lst01 Lst02 Lst03 Lst04 Lst05 Lst06 Lst07 Lst08 Lst09 Lst10 Lst11 Lst12 Lst13 Lst14 Lst15 Lst16 Lst17 Lst18 Lst19

With STM46 model, you can create a list with satellite and terrestrial setups:


Lists AST+ST-ET
List # : 9 AST+ST-ET
name place frequency configuration
--- --- --- --- ---
363 R1 CH PU ST-ETIENNE E50 ---
364 R2 L P B ST-ETIENNE E23 ---
365 R3 CANAL ST-ETIENNE E39 ---
366 R4 M6 AB ST-ETIENNE E54 ---
367 R5 HD ST-ETIENNE E29 ---
368 R6 TF1 N ST-ETIENNE E26 ---
--- --- --- --- ---
0 DIGITAL+ ASTRA 1 10729 VL ---
1 ARD ASTRA 1 10743 HL ---
2 SKY D ASTRA 1 10773 HL ---

4 Set-up

All the material is proofed and checked before shipping and furnished in an adapted package. There are no particular instructions about unpacking.

The appliance is equipped with a lithium-ion battery (Li-ion). It is shipped with a loaded battery.

However, if the appliance has not worked for more than a month, you should check the status of charge of the battery and reload it if necessary.

4.1 Battery

	Caution: You need to dismantle the appliance for any intervention on the battery. Only a VISIOSAT technician must operate such dismantlement. Only use batteries provided by VISIOSAT.

Security advice:

- ➔ Do not throw the pack battery into the fire; do not heat it
- ➔ Do not shunt the elements of the battery: risk of explosion!
- ➔ Do not pierce it
- ➔ Do not disassemble the pack battery
- ➔ Do not reverse the polarities of the battery
- ➔ The pack battery includes a protection item that should not be damaged or removed
- ➔ Do not stock the pack in a hot place
- ➔ Do not damage the protection casing of the pack
- ➔ Do not stock the pack in a vehicle that may be exposed to direct sunlight.

The life of the battery is 200 loading/unloading cycles or 2 years.

Advice for a longer life of your battery:

- ➔ Do not unload it too much
- ➔ Do not stock the batteries too long without using them
- ➔ Stock the battery with ca. 40% loading
- ➔ Do not load or unload completely the battery before shelf.

When the battery is nearly completely unloaded, the appliance shows a "**Battery unloaded**" message, then turns off automatically after a few minutes.

4.2 Loading the battery

To load the battery in the appliance:

- Connect the external power supply provided on the jack plug of the appliance (on the right)
- Connect the power supply to the mains.

The internal charger starts loading the battery; the orange light **BAT** turns on.

The appliance must be off during this loading. When the battery is loaded, the BAT light will turn off.

It takes 1 hour 30 minutes to load the battery up to 80%. The total loading requires 2 hours 15 minutes.

The typical working capacity is 3 hours 30 minutes for a TM06, 3 hours 50 min, 2 hours 15 minutes for a SM08 with working remote supply (display of a HD picture) and 2 hours 10 minutes for STM46 with working remote supply (display of a HD picture)

4.3 External power supply

You can supply the appliance with an external power source under continuous voltage. The appliance works under 15V (1A). The charger block provided when you bought the appliance is also an external power supply.

4.4 Start-up

Push the ON/OFF key on the front keyboard.

The introduction window appears on screen.

The message "**Self test: in progress**" is shortly displayed before clearing.

4.5 Updating the software

You can easily update the software to get new functions. The update process requires an USB key.

Download the update file **FIRM_vX.X.BIN** on our website (com):

Insert an USB key in your PC.

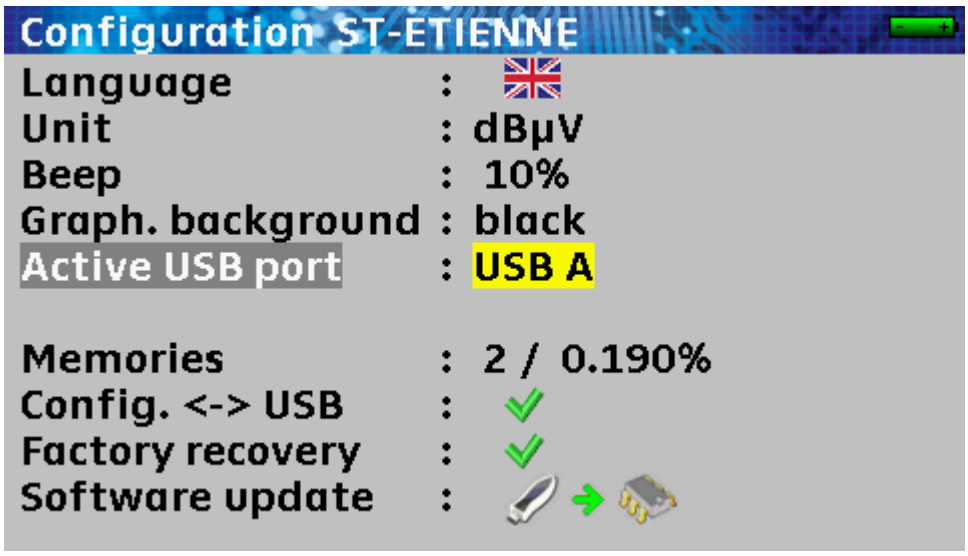
Copy this file on the home directory of the key.

Pull out the USB key.

Turn the appliance on: Check that the battery status is sufficient (> 30%). You'd better connect the appliance to the mains with the provided adapter.

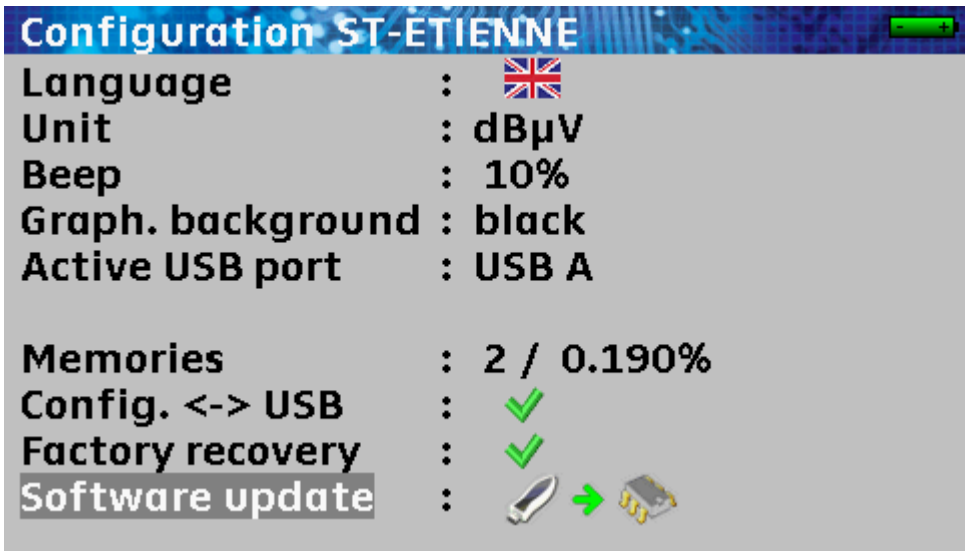
Push the Toolbox key to get the Configuration page.

Check that the active USB port is the USB port A and that nothing is connected to the USB port mini B.



Insert the USB key into the connector of the appliance.

Turn the knob to select Software update.



Push the Validation key

Caution: Do not turn the appliance off during the updating process

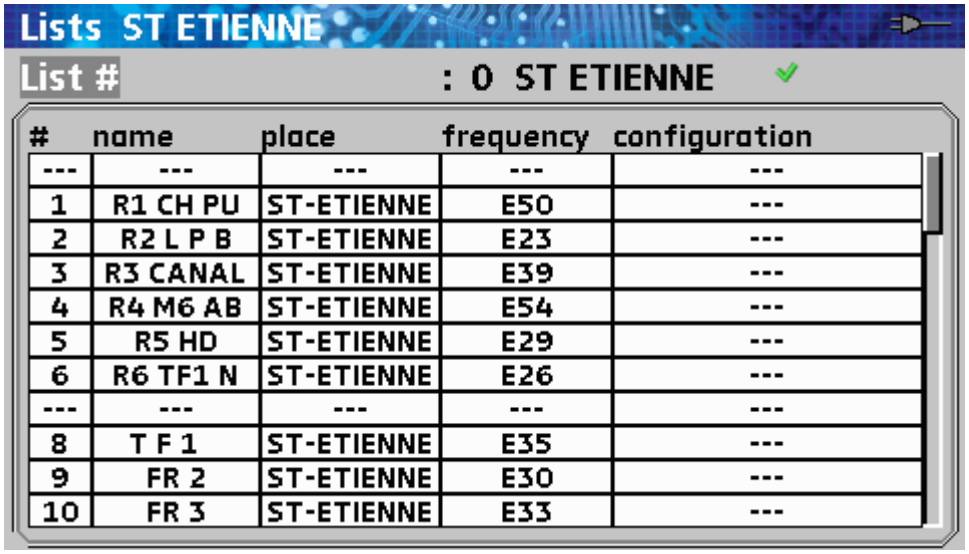
The updating process lasts ca. 3 minutes 30 seconds.

At the end of the updating process, the appliance invites you to push the ON/OFF key.

The software is now uploaded into your appliance.
A few error messages may appear: Do not take them into account.

5 Setting the parameters of the measurement lists

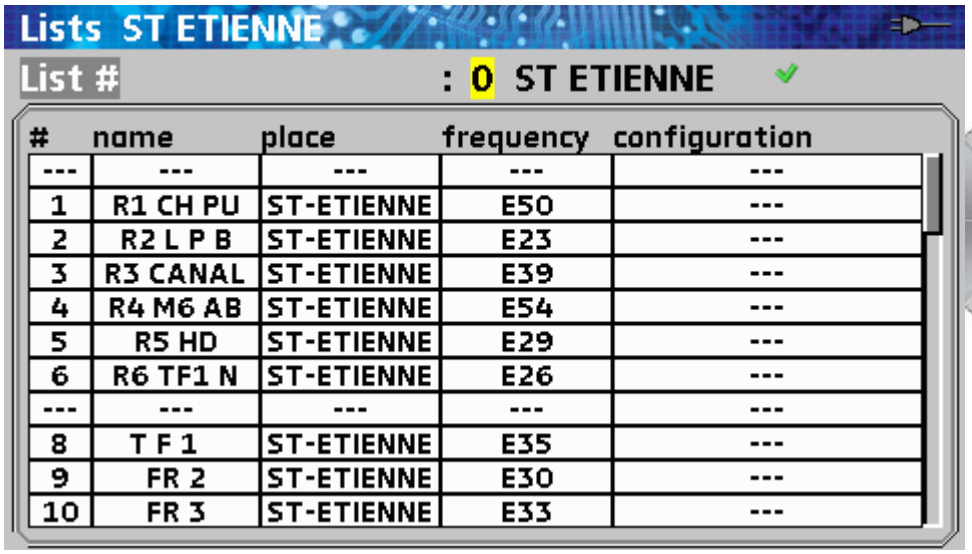
Pushing the PARAMETERS key gives you access to the **Parameters** function:



#	name	place	frequency	configuration
---	---	---	---	---
1	R1 CH PU	ST-ETIENNE	E50	---
2	R2 L P B	ST-ETIENNE	E23	---
3	R3 CANAL	ST-ETIENNE	E39	---
4	R4 M6 AB	ST-ETIENNE	E54	---
5	R5 HD	ST-ETIENNE	E29	---
6	R6 TF1 N	ST-ETIENNE	E26	---
---	---	---	---	---
8	T F 1	ST-ETIENNE	E35	---
9	FR 2	ST-ETIENNE	E30	---
10	FR 3	ST-ETIENNE	E33	---

In this page, you can change of measurement list, modify the name of the list, modify the parameters of a line, erase the data of a line and erase all data in the measurement list.

- Selection of an active measurement list among the twenty available ones



#	name	place	frequency	configuration
---	---	---	---	---
1	R1 CH PU	ST-ETIENNE	E50	---
2	R2 L P B	ST-ETIENNE	E23	---
3	R3 CANAL	ST-ETIENNE	E39	---
4	R4 M6 AB	ST-ETIENNE	E54	---
5	R5 HD	ST-ETIENNE	E29	---
6	R6 TF1 N	ST-ETIENNE	E26	---
---	---	---	---	---
8	T F 1	ST-ETIENNE	E35	---
9	FR 2	ST-ETIENNE	E30	---
10	FR 3	ST-ETIENNE	E33	---

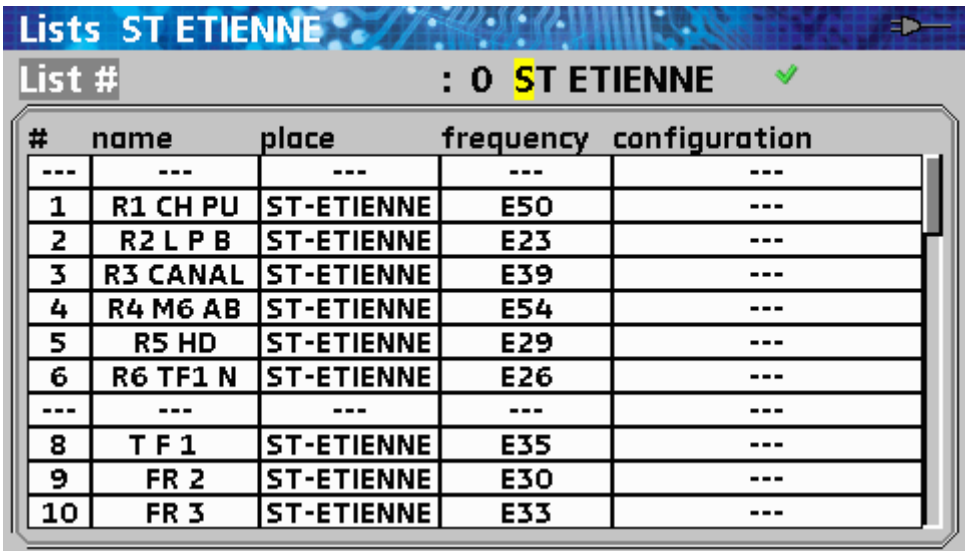
Push the Validation key

Rotate the knob to change of list

Push the Back key

When the list number is selected, you can also use the Toolbox key to display a selection list

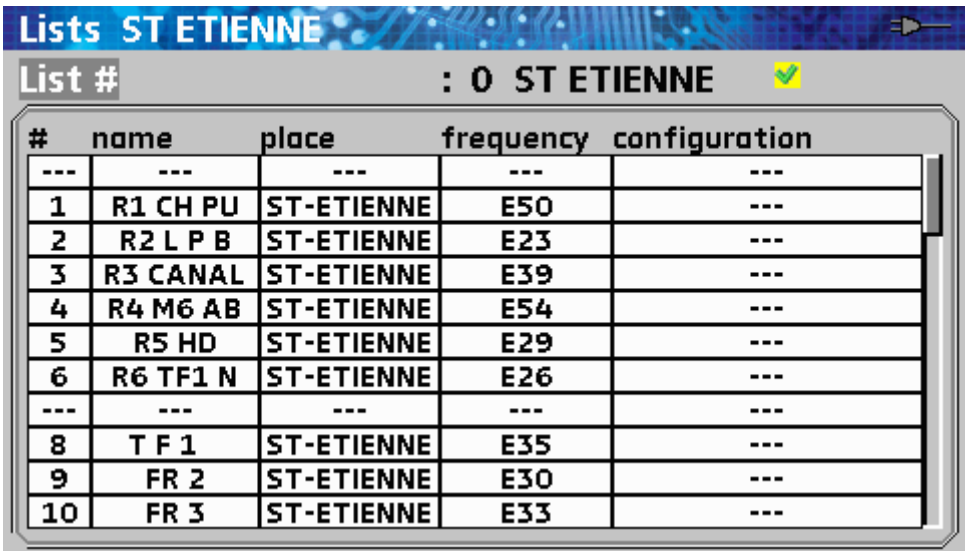
- **Modification of the name of the list**


Lists ST ETIENNE
List # : 0 ST ETIENNE
name place frequency configuration
--- --- --- --- ---
1 R1 CH PU ST-ETIENNE E50 ---
2 R2 L P B ST-ETIENNE E23 ---
3 R3 CANAL ST-ETIENNE E39 ---
4 R4 M6 AB ST-ETIENNE E54 ---
5 R5 HD ST-ETIENNE E29 ---
6 R6 TF1 N ST-ETIENNE E26 ---
--- --- --- --- ---
8 T F 1 ST-ETIENNE E35 ---
9 FR 2 ST-ETIENNE E30 ---
10 FR 3 ST-ETIENNE E33 ---

Push the Validation key to select the character to modify.

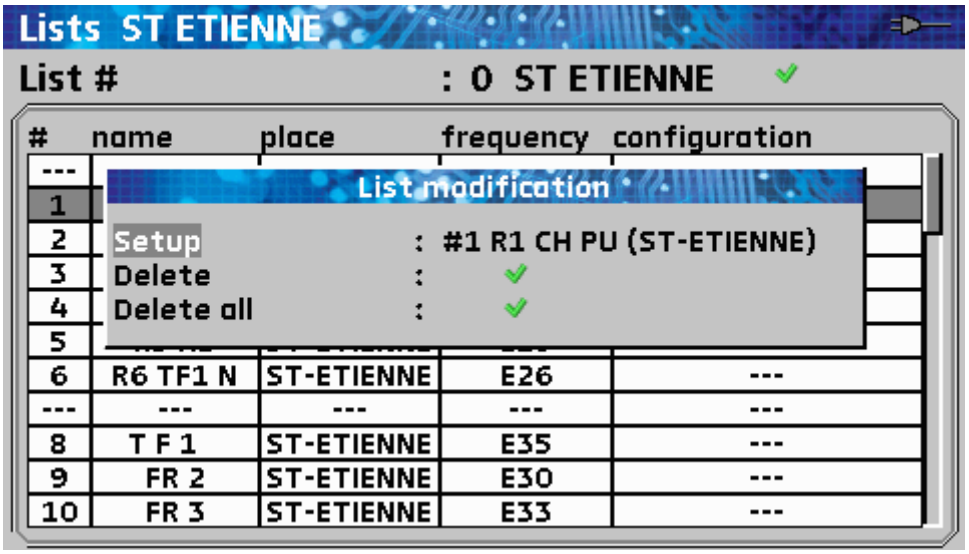
Rotate the knob to change the character

Push the Validation key to select the following character.


Lists ST ETIENNE
List # : 0 ST ETIENNE
name place frequency configuration
--- --- --- --- ---
1 R1 CH PU ST-ETIENNE E50 ---
2 R2 L P B ST-ETIENNE E23 ---
3 R3 CANAL ST-ETIENNE E39 ---
4 R4 M6 AB ST-ETIENNE E54 ---
5 R5 HD ST-ETIENNE E29 ---
6 R6 TF1 N ST-ETIENNE E26 ---
--- --- --- --- ---
8 T F 1 ST-ETIENNE E35 ---
9 FR 2 ST-ETIENNE E30 ---
10 FR 3 ST-ETIENNE E33 ---

Push the Validation key to validate the new name

- **Modification of data**


Lists ST ETIENNE
List # : 0 ST ETIENNE
name place frequency configuration
List modification
Setup : #1 R1 CH PU (ST-ETIENNE)
Delete :
Delete all :
6 R6 TF1 N ST-ETIENNE E26 ---
--- --- --- --- ---
8 T F 1 ST-ETIENNE E35 ---
9 FR 2 ST-ETIENNE E30 ---
10 FR 3 ST-ETIENNE E33 ---

Rotate the knob to reach the line to modify

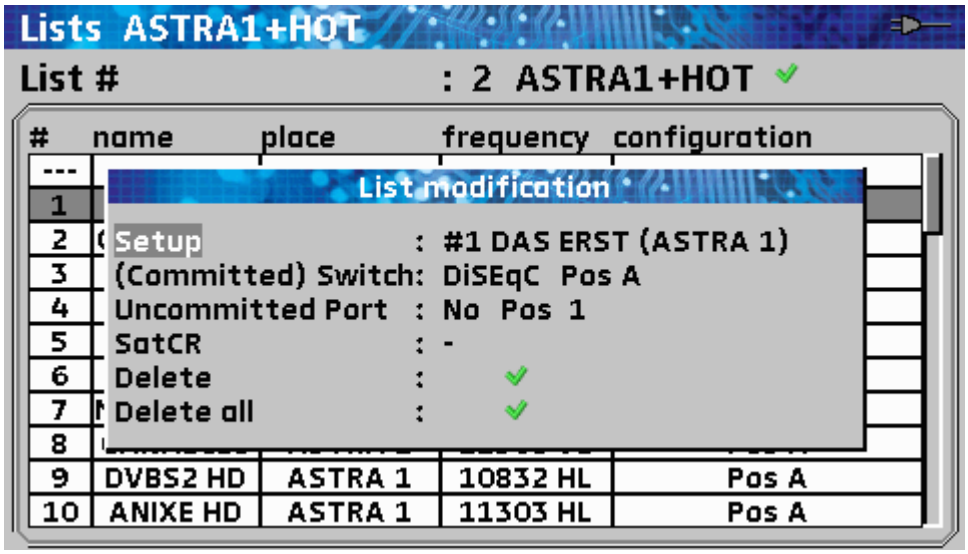
Push the Validation key to open the List modification page

You can change data after selection of the affected line thanks to the knob and after pushing the Validation key

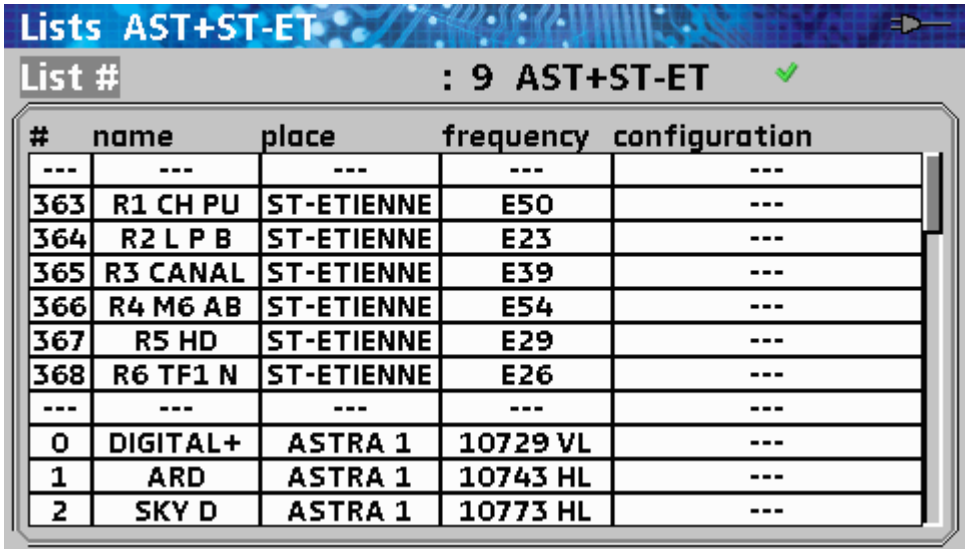
The Delete line cancels all data in the current line.

The Delete all line cancels all data in the current line (confirmation required).

In terrestrial band or cable band, only the number of the setup matters. In satellite band, there are also switches of committed and uncommitted type and the SatCR mode.

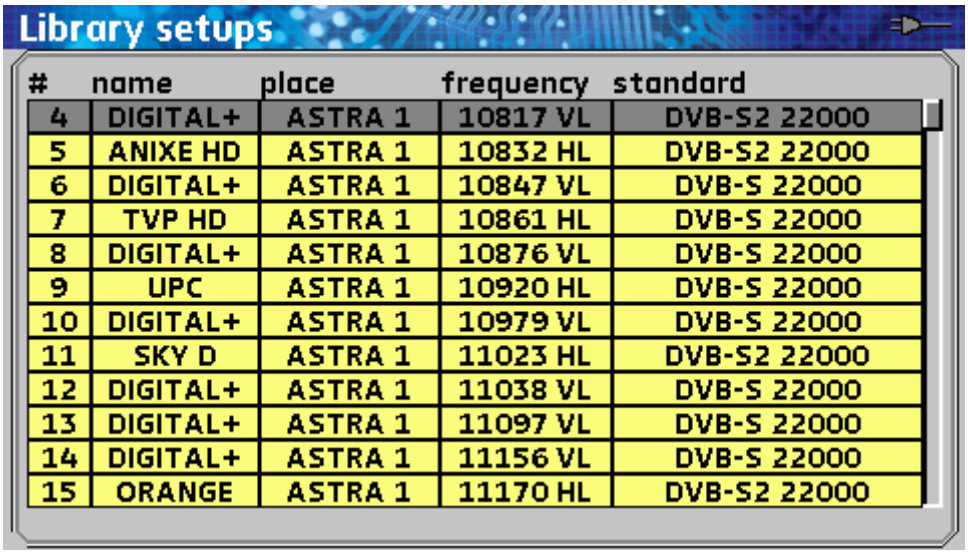

Lists ASTRA1+HOT
List # : 2 ASTRA1+HOT
name place frequency configuration
List modification
Setup : #1 DAS ERST (ASTRA 1)
(Committed) Switch: DiSEqC Pos A
Uncommitted Port : No Pos 1
SatCR : -
Delete :
Delete all :
9 DVBS2 HD ASTRA 1 10832 HL Pos A
10 ANIXE HD ASTRA 1 11303 HL Pos A

With STM46 model, you can create a list with satellite and terrestrial setup:


Lists AST+ST-ET
List # : 9 AST+ST-ET
name place frequency configuration
363 R1 CH PU ST-ETIENNE E50 ---
364 R2 L P B ST-ETIENNE E23 ---
365 R3 CANAL ST-ETIENNE E39 ---
366 R4 M6 AB ST-ETIENNE E54 ---
367 R5 HD ST-ETIENNE E29 ---
368 R6 TF1 N ST-ETIENNE E26 ---
0 DIGITAL+ ASTRA 1 10729 VL ---
1 ARD ASTRA 1 10743 HL ---
2 SKY D ASTRA 1 10773 HL ---

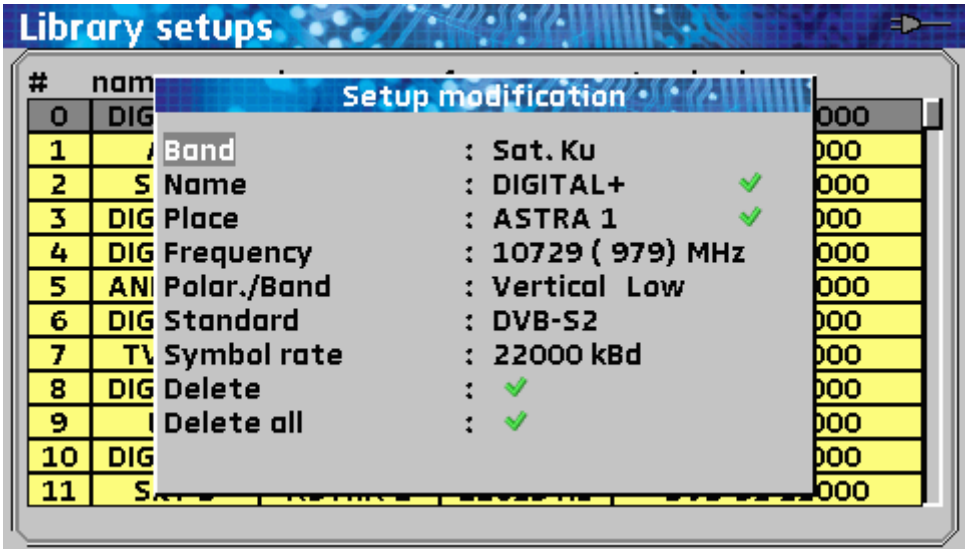
6 Library setups

Pushing twice on the Parameters key gives you access to the **Setup list** function:


Library setups
name place frequency standard
4 DIGITAL+ ASTRA 1 10817 VL DVB-S2 22000
5 ANIXE HD ASTRA 1 10832 HL DVB-S2 22000
6 DIGITAL+ ASTRA 1 10847 VL DVB-S 22000
7 TVP HD ASTRA 1 10861 HL DVB-S 22000
8 DIGITAL+ ASTRA 1 10876 VL DVB-S 22000
9 UPC ASTRA 1 10920 HL DVB-S 22000
10 DIGITAL+ ASTRA 1 10979 VL DVB-S 22000
11 SKY D ASTRA 1 11023 HL DVB-S2 22000
12 DIGITAL+ ASTRA 1 11038 VL DVB-S 22000
13 DIGITAL+ ASTRA 1 11097 VL DVB-S 22000
14 DIGITAL+ ASTRA 1 11156 VL DVB-S 22000
15 ORANGE ASTRA 1 11170 HL DVB-S2 22000

In this page, you can create a new setup, change the parameters of a setup, erase data in a setup and erase the data of all setups.

- **Modification of the data in a setup**



Rotate the knob to reach the setup to modify

Push the Validation key to open the Setup modification page

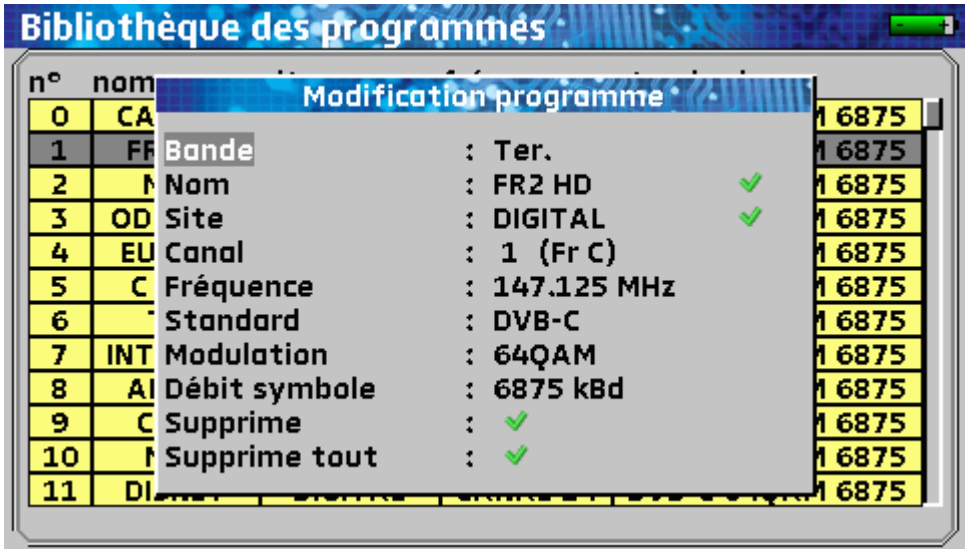
You can modify data after selection of the line to change with the knob and the Validation key

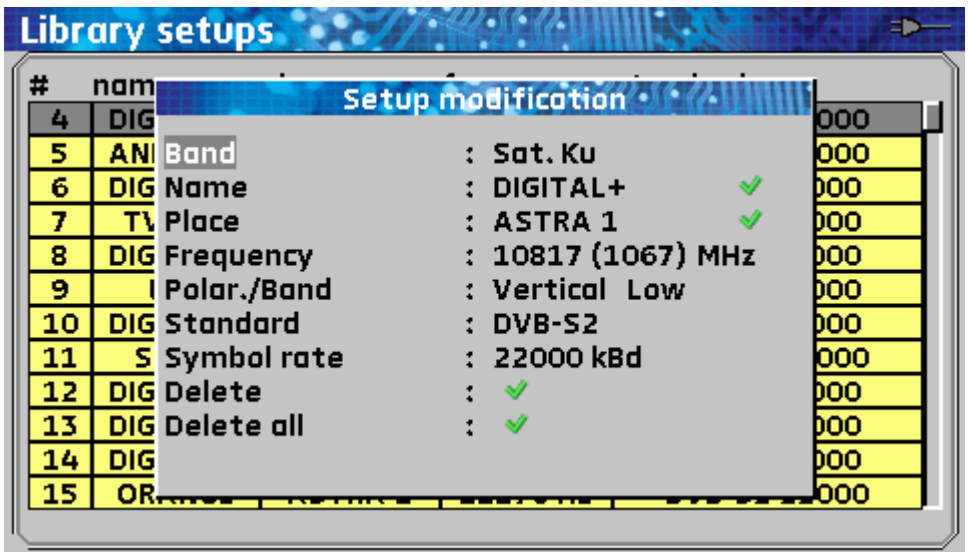
The band line allows choosing the frequency band.

The Delete line cancels all data in the current line.

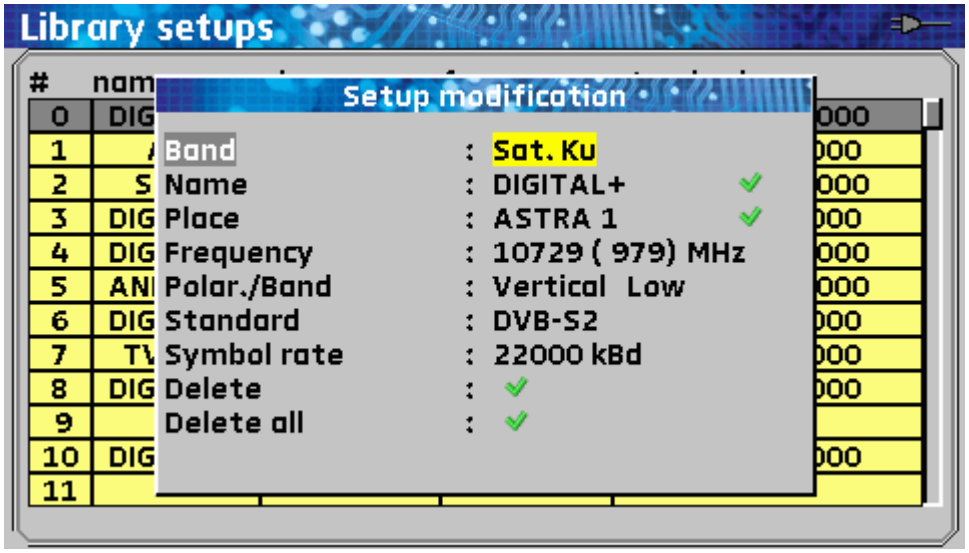
The Delete all line cancels all data in the current line (confirmation required).

According to the terrestrial, cable or satellite band and to the selected standard, the content of the page is different.





The « band » parameter allows choosing between these frequencies ranges:



Ter. : Terrestrial

Sat. L : Satellite L band (950Mhz-2150MHz)

Sat. Ku : Satellite Ku band (10700-12750MHz)

Sat. C : Satellite C band (3000-4200MHz)

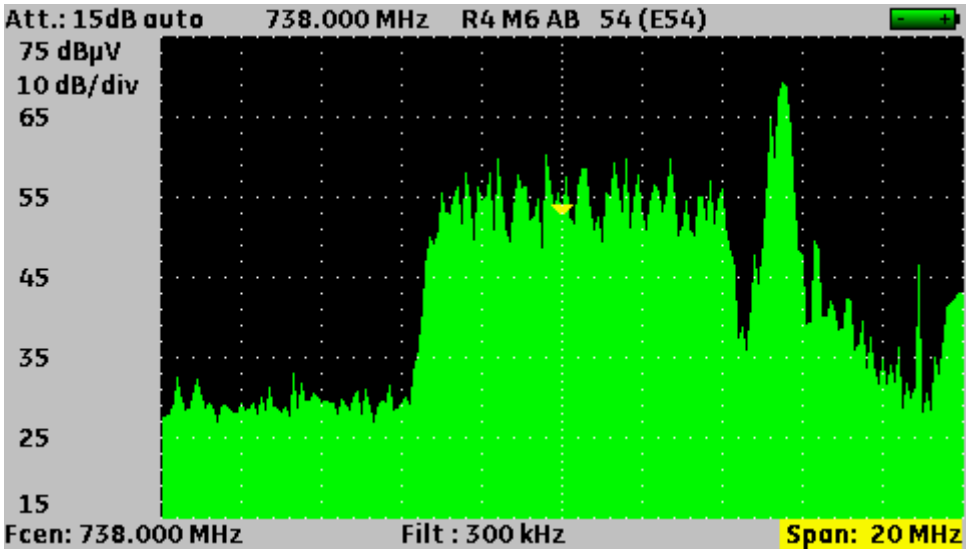
☞	TM06: Terrestrial band only. (This parameter can't be modified) SM08: Satellite C band + L band + Ku band. STM46: Terrestrial band + Satellite C band + L band + Ku band.

☞	For STM46 model, (allowing terrestrial or satellite setups) it's possible to change from terrestrial to satellite by: - changing the frequency band - changing the frequency - changing the standard

7 Spectrum analyzer

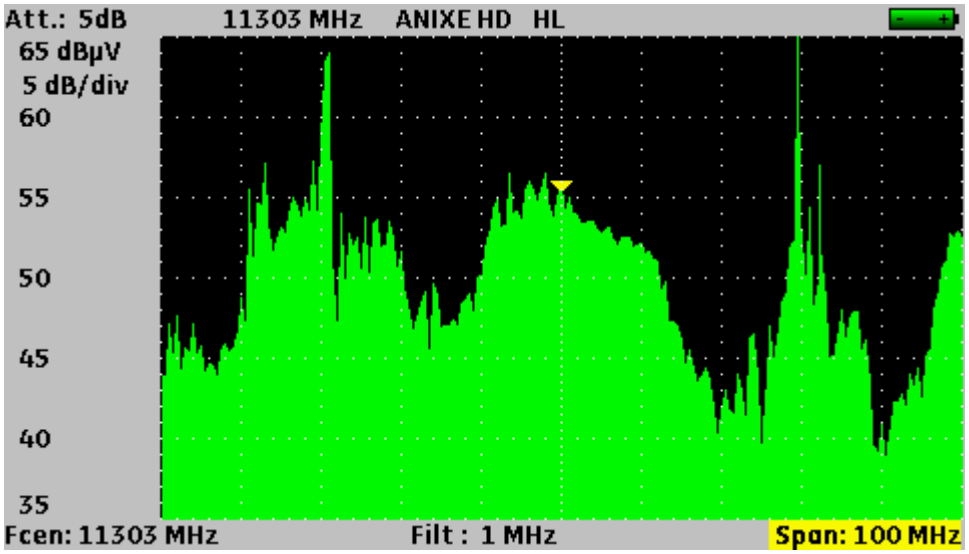
Pushing the Spectrum key gives you access to the **Spectrum analyzer** function:

In terrestrial band or cable band, the analysis filter is 300 kHz wide.

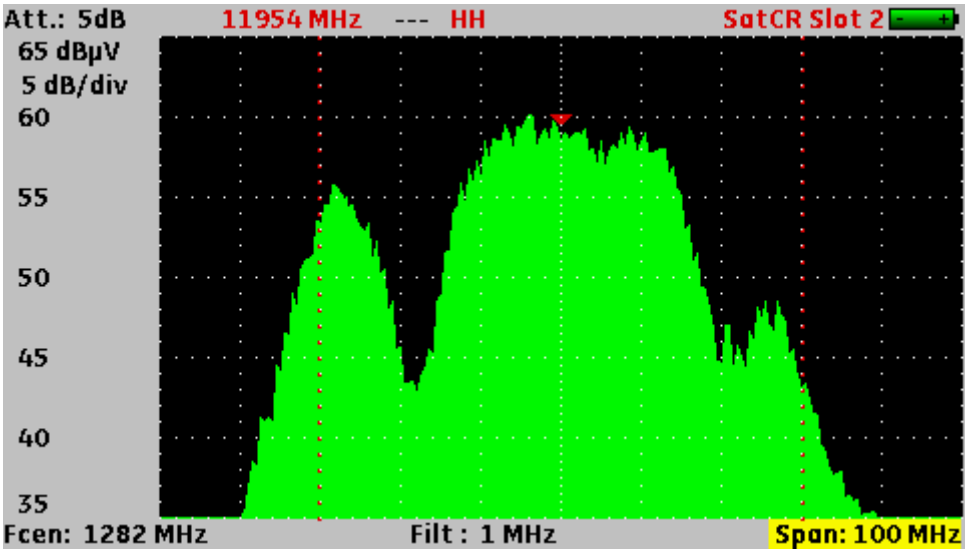


You can move the cursor along the frequency range, channel per channel or setup per setup.

You access the various setups with the Validation key; you change them with the knob.



In satellite band, the analysis filter is 1MHz wide. You can directly change the polarization and the band, hence an easier adjustment of the counter-polarization.



In SatCR mode, two red-dotted lines indicate the width of the slot.

If the measurement list includes setups with all possible slots, you can display them very easily by simply changing of setup.

The current slot number is displayed on the upper right of the screen.

You can change the following parameters:

- The frequency of the cursor
- The number of the setup

- The number of the channel or the polarization and the band
- The reference level
- The number of dB/division
- The central frequency
- The span width (span)

	The default position of the input pad is in automatic mode. Any change of the reference level stops the automatic mode. Only a return to the Spectrum page will re-launch it.

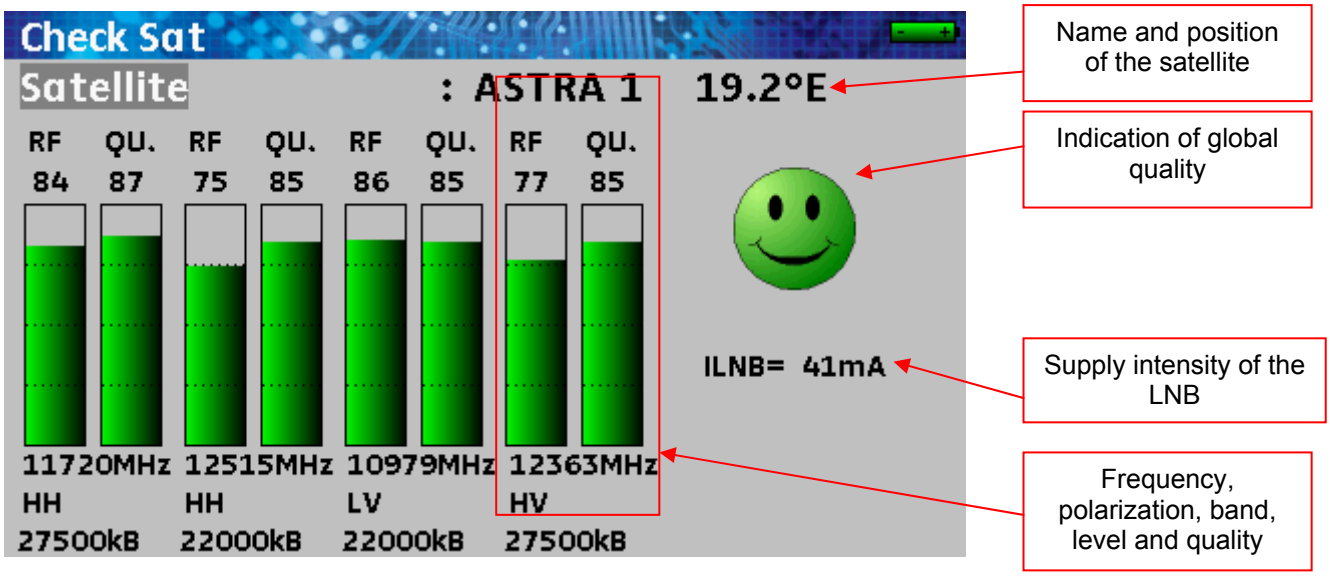
	In manual input pad mode, the input level must be lower than Att + 50 dBµV to prevent any saturation of the input and any false representation. Example: To correctly display an 110dBµV signal, you need a 60dB pad.

	For STM46 model, (allowing terrestrial and satellite setups) it's possible to change from terrestrial to satellite in spectrum by: - changing frequency with the knob - changing the setup

8 Dish adjustment (SM08-STM46)

	Only in Satellite band The dish adjustment mode enables you to quickly orientate the dish with the initial selection of the satellite to receive.

Push the Spectrum key twice to access to the **Dish adjustment** function.


Check Sat
Satellite : ASTRA 1 19.2°E
RF QU. RF QU. RF QU. RF QU.
84 87 75 85 86 85 77 85
ILNB= 41mA
11720MHz 12515MHz 10979MHz 12363MHz
HH HH LV HV
27500kB 22000kB 22000kB 27500kB
Name and position of the satellite
Indication of global quality
Supply intensity of the LNB
Frequency, polarization, band, level and quality

The appliance has 32 orbital positions available for satellites. About 10 satellites are specified at delivery.

4 transponders are associated to each satellite.

Use the Validation key and the knob to change of satellite.

8.1 Updating the satellites

You can now add new satellites and update or erase old ones with a computer and a USB key.

Open the Sat.xls file with a spreadsheet software (the file is available on our website)
http://www.visiosat.com

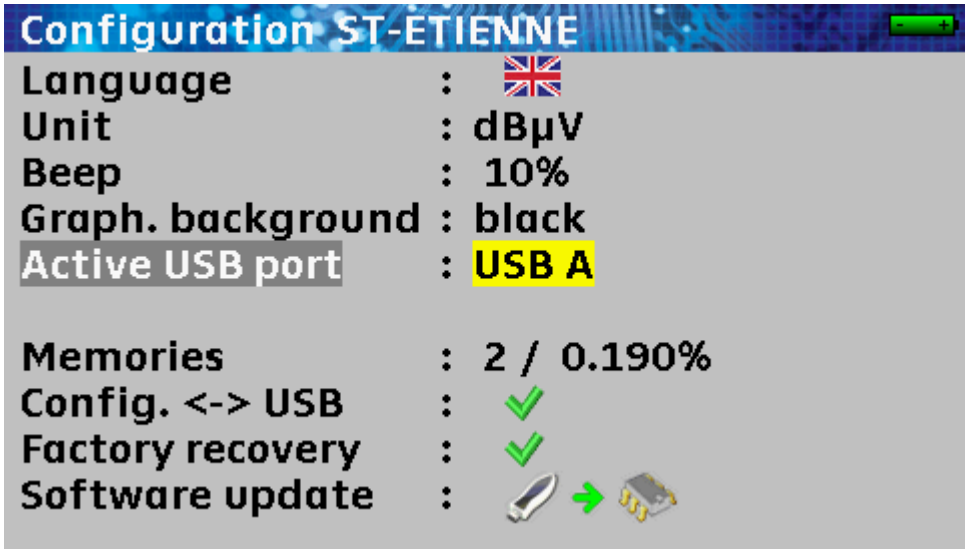
Change the values as required.

	The locking time depends on the transponder rate. The lower the rate, the longer the locking time. Thus, you'd better choose high rate transponders to align the dish.

Save the file.
Save the file once again under CSV format; call it Sat.csv.
There is a CSV macro-command that does it all: Ctrl + Shift + C on keyboard. (Office 2007 2010 only)
Copy the Sat.csv file on the home directory of the USB key.

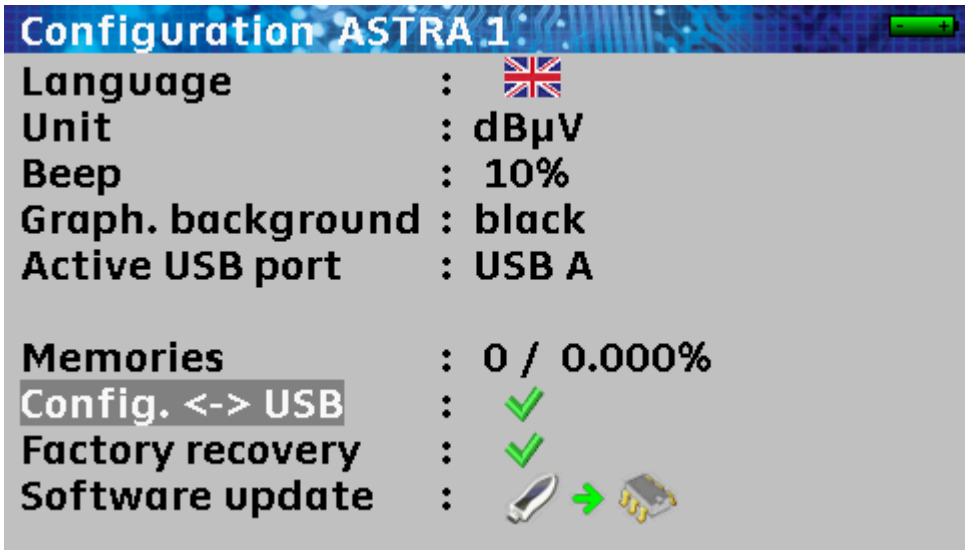
Push the Toolbox key until reaching the Configuration page.

Check that the active USB port is the port USB A, and that nothing is connected to the USB port mini B.



Insert the USB key into the connector of the appliance.

Turn the knob to select the line Config. <-> USB.



Push the Validation key

The previous configuration is saved on the key; the new one is transferred to the appliance.

8.2 Dish adjustment process

Procedure:

1/ Connect the dish to the appliance; turn it on.

2/ Validate the remote supply:

- The VDC light turns on the front side.
- Check the supply intensity of the LNB (about 50 to 200 mA).

3/ Select the satellite for alignment in the list (with the knob).

4/ Slowly turn the dish until you get the highest level and hearing the locking signal.

5/ Slightly turn the LNB to get the highest quality (counter-polarization).
You can hear a melody as soon as the first transponder has been found; then, you will hear beeps.
The higher the quality, the more frequent these beeps.

If the appliance has not been synchronized on all four transponders, the quality indicator is **red**.

If the appliance is synchronized on all four transponders but the reception quality is medium, it is **orange**.

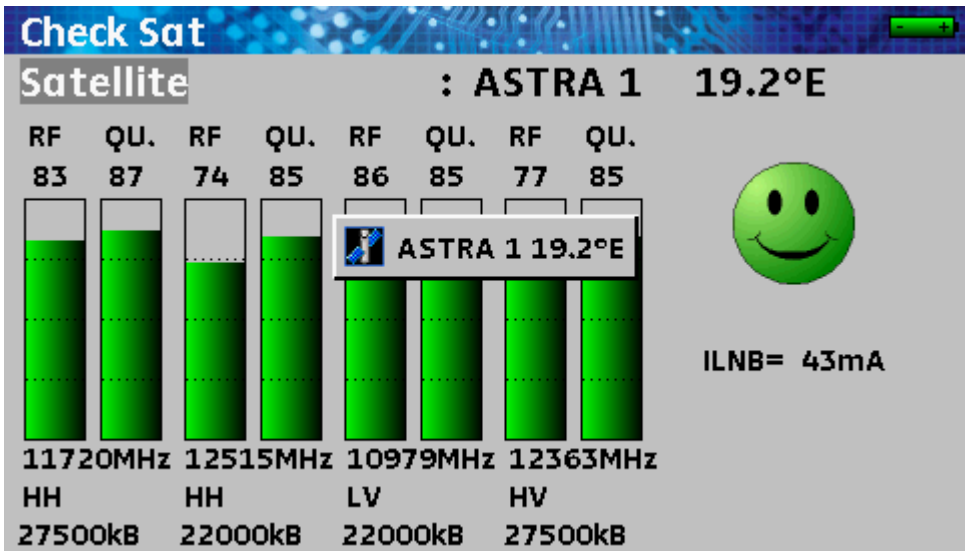
If the appliance is synchronized on all four transponders and if the reception quality is good, it is **green**.

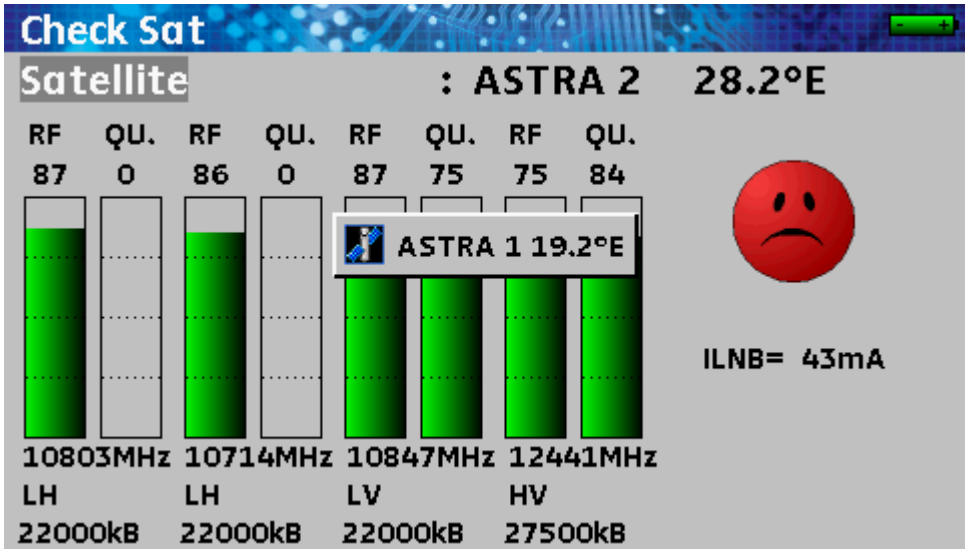
	Caution: **To identify a satellite, the appliance must be synchronized on all 4 transponders.** **However, some transponders are regularly modified.** **Consult the frequency plan of the satellite when the transponder does not seem to work.** **Some switches or LNB only work with DiSEqC commands. In this case, position the OL and the polarization on DiSEqC at the LNB-DiSEqC configuration page (Caution: the orientation will be slower if you use the DiSEqC command).**

8.3 Control of the satellite

To check if the selected satellite is the one you want: push the Spectrum key

Then, the appliance looks for the MPEG NIT table on one of the 4 transponders and displays the name of the satellite:


Check Sat
Satellite : ASTRA 1 19.2°E
RF QU. RF QU. RF QU. RF QU.
83 87 74 85 86 85 77 85
ASTRA 1 19.2°E
ILNB= 43mA
11720MHz 12515MHz 10979MHz 12363MHz
HH HH LV HV
27500kB 22000kB 22000kB 27500kB


Check Sat
Satellite : ASTRA 2 28.2°E
RF QU. RF QU. RF QU. RF QU.
87 0 86 0 87 75 75 84
ASTRA 1 19.2°E
ILNB= 43mA
10803MHz 10714MHz 10847MHz 12441MHz
LH LH LV HV
22000kB 22000kB 22000kB 27500kB

	Caution: **The displayed name depends on the content of the MPEG NIT table.** **Some providers do not (or badly) furnish this table.** **The displayed information may be wrong.**

9 Level / Power Measurement

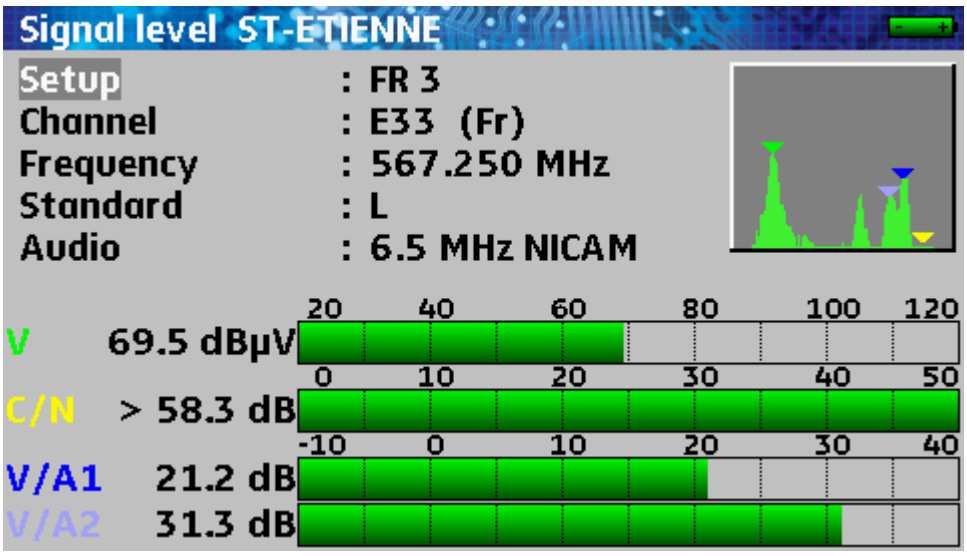
Pushing the Measurement key gives you access to the **Level measurement** function.

It is thus possible to make a level measurement at a specified frequency with a detection mode adapted to the standard.

You can either make measurements on a saved setup (see chapter Setting the parameters of the measurement lists) or modify each parameter manually.

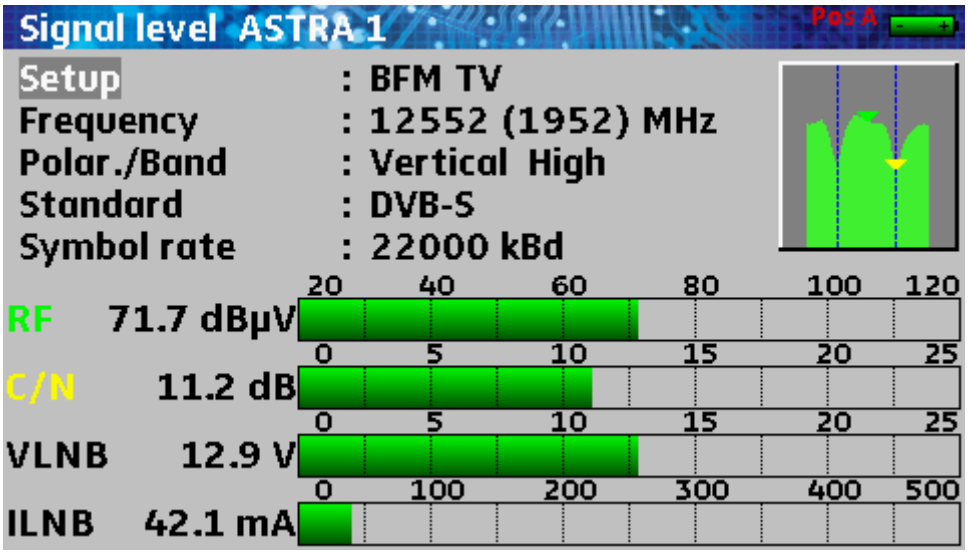
	In terrestrial band, for a user plug, the level should be: - **between 50 and 66 dBµV in FM** - **between 35 and 70 dBµV in DVB-T/H** - **between 57 and 74 dBµV in any other case.**

	In satellite band, for a user plug, the level should be: - **between 47 and 77 dBµV.**



Terrestrial band

Satellite band



9.1 Modification of the parameters

The various parameters are:

- The number of the setup
- The number of the channel and the corresponding frequency plan for the terrestrial band or the polarization and the band for the satellite.

	Caution: The vector of these commutations is the remote supply; the 22kHz modulation or DiSEqC is superimposed on the continuous voltage generated by the appliance.

- The frequency of the emitter or the transponder (and the real frequency in satellite)
- The standard and the bandwidth for the DVB-T/H
- The audio mode for the analogical TV
- The symbol rate for the digital TV.

	For STM46 model, (allowing terrestrial and satellite setups) it's possible to change from terrestrial to satellite in level/power measurement by: - changing frequency - changing standard - changing the setup (from terrestrial to satellite setup)

See chapter Man-machine interface for any modification.

9.2 Measurements according to the standard

The appliance makes various measurements according to the valid **standard**.

The available measurements are **Average**, **Peak** and **Power**.

9.2.1 Terrestrial band

The appliance automatically makes level measurements on the **Video carrier wave** and on **1 or 2 Sound carrier waves** according to the selected Audio mode.

The table below lists the measurement types and the frequencies of the audio carrier waves of each standard:

Standard	Video carrier wave	Measure	Sound carrier waves		
			Mono	Stereo	NICAM
BG	negative, AM	Peak	FM 5.5 MHz	FM 5.74 MHz	DQPSK 5.85 MHz
DK	negative, AM	Peak	FM 6.5 MHz	FM 6.258 MHz	DQPSK 5.85 MHz
I	positive, AM	Peak	FM 6.0 MHz		DQPSK 6.552 MHz
L	positive, AM	Peak	AM 6.5 MHz		DQPSK 5.85 MHz
MN	negative, AM	Peak	FM 4.5 MHz	FM 4.72 MHz	
DVB-T/H	Digital	Power			
FM	FM	Average			
Carrier	Non modulated	Average			

The appliance displays the level of the **Video** carrier wave, the ratio(s) **Video/Audio** and the ratio **C/N**.
The display is made of one to four measures and bar graphs.
The measurement of the **Audio** carrier waves is always an **Average** measurement.

9.2.2 Satellite band

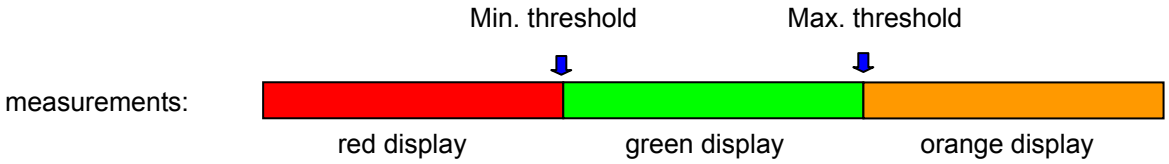
Standard	Video carrier wave	Measurement
PAL	FM	Peak
SECAM	FM	Peak
NTSC	FM	Peak
DVB-S	Digital	Power
DSS	Digital	Power
DVB-S2	Digital	Power

9.3 Thresholds

Predefined thresholds are used to specify if the measurement is pertinent.

Standard	Min.	Max.
Terrestrial analogical TV	57	74
DVB-T/H	35	70
FM, carrier wave	50	66
Satellite analogical TV	47	77
DVB-S, DSS	47	77
DVB-S2	47	77

Decision thresholds are used for the display of the measurements « Power Level » and « Measurement Plan »:



10 Measurement of error rates

Pushing several times on the Measurement key gives you access to the **Measurement of error rates** function.

The displayed values are the different **BER** (Bit Error Rate), the **PER** (Packet Error Rate) and the **MER** (Modulation Error Ratio) in **DVB-T/H, DVB-S, DVB-S2** or **DSS.**

	The bar graphs are displayed in colours according to the measurement values for the error rates: - GREEN: right error rates - ORANGE: BERo > **1-4** (QEF: Quasi Error Free) without lost packet - RED: lost packets (PER) The Automatic Frequency Control (AFC) is automatically activated in case of measurement of error rates.

These measures are available if one of these standards is in process in the **Level measurement** page:

- DVB-T/H (TM06, STM46)
- DVB-S, DSS, DVB-S2 (SM08, STM46)

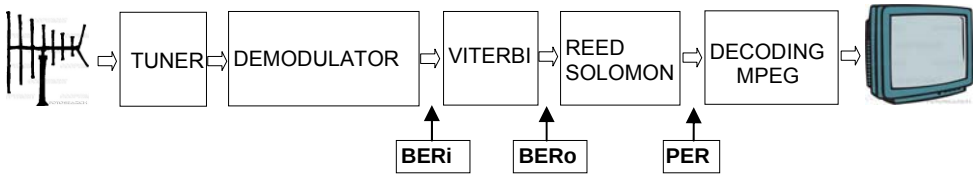
The parameters on this page are the same as on the page Level measurement with additional parameters specific to each modulation.

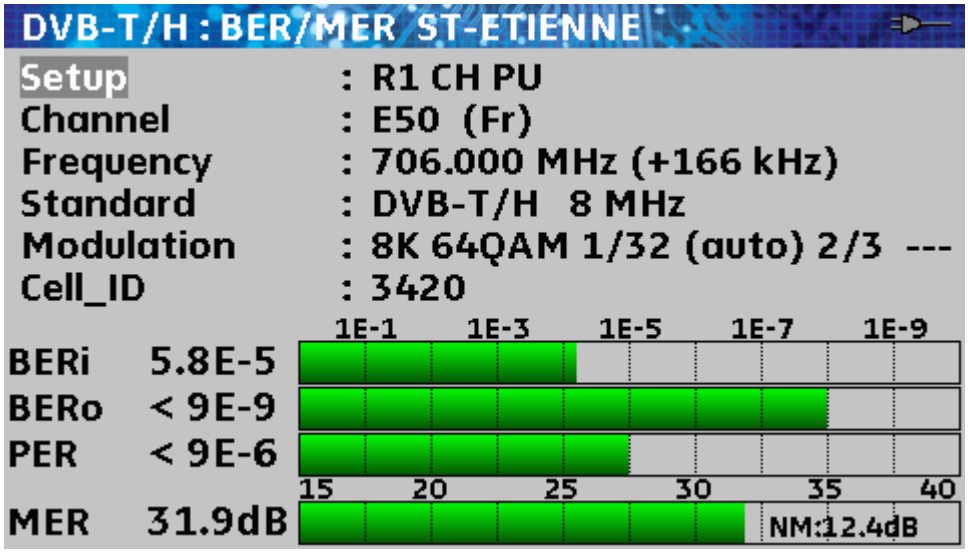
	The **"Sync ?"** message specifies that the signal is absent or not locked; check its presence, the modulation parameters, the remote supply and the LNB and DiSEqC parameters in satellite band.

	The sign **<** before an error rate value means that there were no error but 10^{X} bits have been tested (ex. $<1^{E-8}$ means 1^{E8} bits have been tested).

	For STM46 model, (allowing terrestrial and satellite setups) it's possible to change from terrestrial to satellite in measurement of error rate by: - changing frequency - changing standard - changing the setup (from terrestrial to satellite setup)

10.1 DVB-T/H (TM06-STM46)




DVB-T/H : BER/MER ST-ETIENNE
Setup : R1 CH PU
Channel : E50 (Fr)
Frequency : 706.000 MHz (+166 kHz)
Standard : DVB-T/H 8 MHz
Modulation : 8K 64QAM 1/32 (auto) 2/3 ---
Cell_ID : 3420
1E-1 1E-3 1E-5 1E-7 1E-9
BERi 5.8E-5
BERo < 9E-9
PER < 9E-6
15 20 25 30 35 40
MER 31.9dB
NM:12.4dB

Display of the values:

- **BERi**: error rate before Viterbi
- **BERo**: error rate after Viterbi
- **PER**: error rate after Reed Solomon (packet error rate)
- **MER**: modulation error rate
- **NM**: noise margin

BERx: 'bits' error rate

Ratio of the number of erroneous bits / number of transmitted bits during the measuring time

PER: 'packets' error rate

Ratio of the number of erroneous packets / number of transmitted packets during the measuring time

Remember: a packet in DVB-T/H is made of 204 bytes; a packet is 'wrong' if it includes more than 8 wrong bytes (correction by Reed Solomon coding).

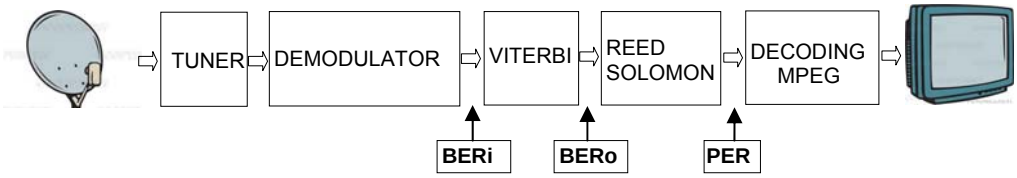
Display of the detected **Modulation** type:

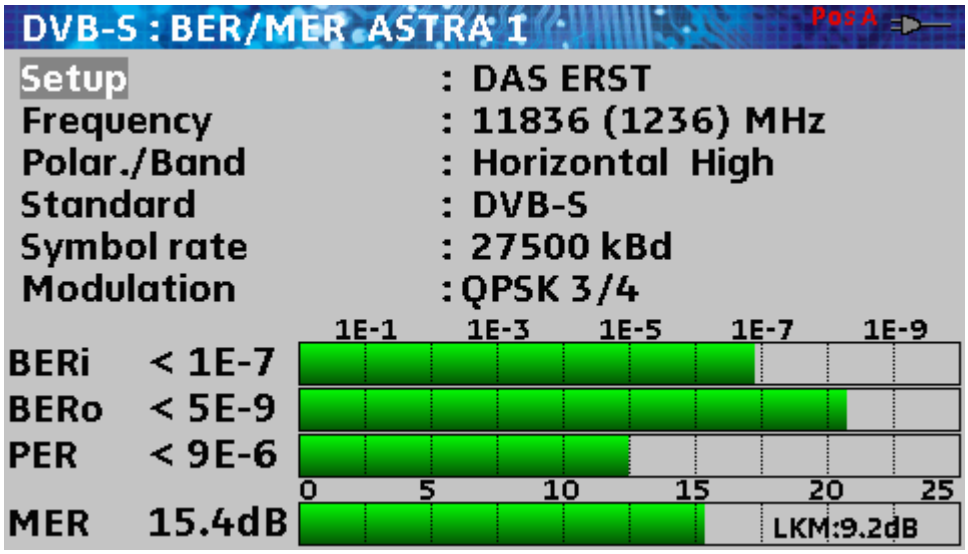
- number of carrier waves (8 K)
- constellation (64QAM)
- guard interval (1/32 auto)
- Viterbi rate (2/3)
- spectrum inversion.

In case of poor quality signal or co-frequent analogical signal, you'd better choose the manual front guard interval mode. To do this, you had to change the "Modulation" parameter by choosing the good guard interval.

The display of the value of Cell_ID indicated by the provider and specific to the emitter.

10.2 DVB-S and DSS (SM08-STM46)





Display of the values:

- **BERi** : error rate before Viterbi
- **BERo** : error rate after Viterbi
- **PER** : error rate after Reed Solomon (packet error rate)
- **MER** : modulation error rate
- **LKM**: link margin

BERx: 'bits' error rate

Ratio of the number of erroneous bits / number of transmitted bits during the measuring time

PER: 'packets' error rate

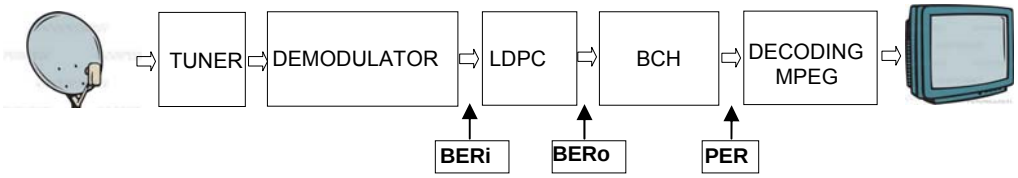
Ratio of the number of erroneous packets / number of transmitted packets during the measuring time

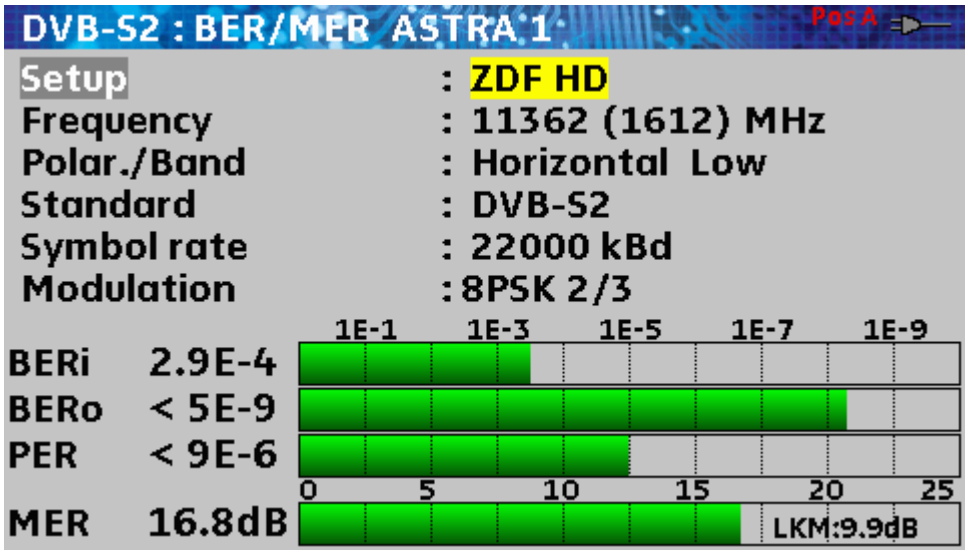
Remember: a packet in QPSK (DVB-S) is made of 204 bytes; a packet is 'wrong' if it includes more than 8 wrong bytes (correction by Reed Solomon coding). In DSS, a packet is made of 146 bytes.

Display of the detected **Modulation** type:

- the constellation (QPSK)
- the Viterbi rate (3/4)

10.3 DVB-S2 (SM08-STM46)





Display of the values:

- **BERi** : error rate before LDPC
- **BERo** : error rate after LDPC
- **PER** : error rate after BCH (lost packets)
- **MER** : modulation error rate
- **LKM**: link margin

Remember:

LDPC: Low Density Parity Check

BCH: Bose Chauhuri Houquenohem

In DVB-S2, the concatenation LDPC + BCH has replaced the concatenation Viterbi + Reed Solomon of the correction of the DVB-S.

Display of the detected **Modulation** type:

- the constellation (8PSK)
- the Viterbi rate (2/3)

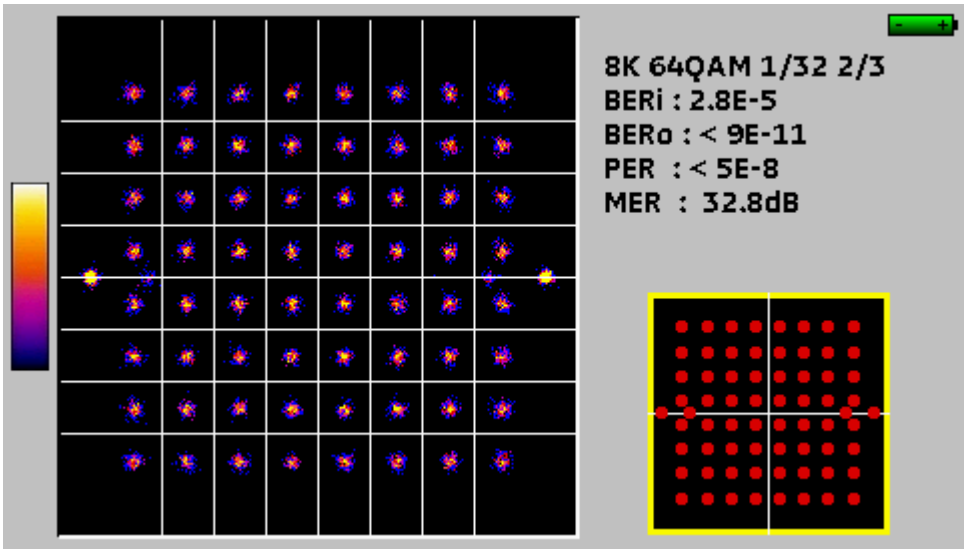
11 Constellation

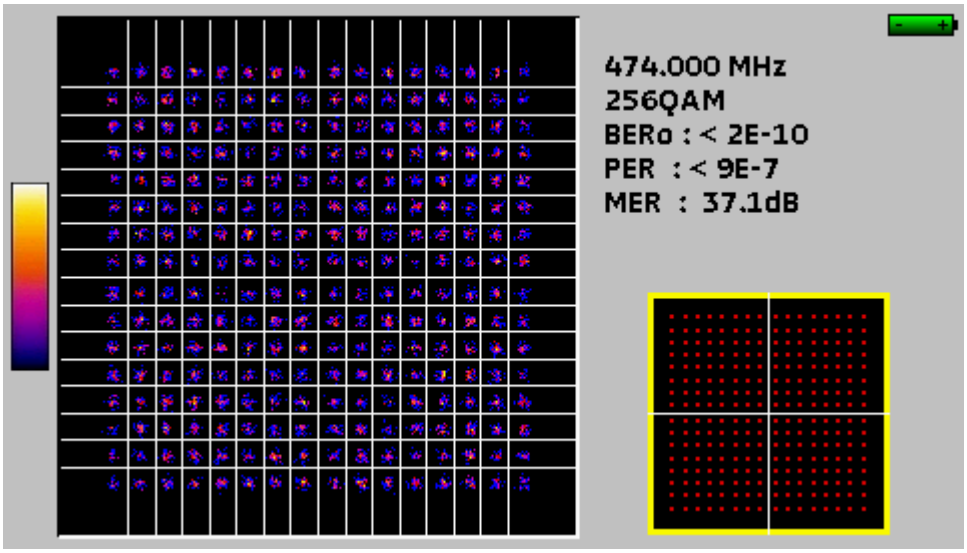
Pushing several times of the Measurement key give you access to the **Constellation** function.

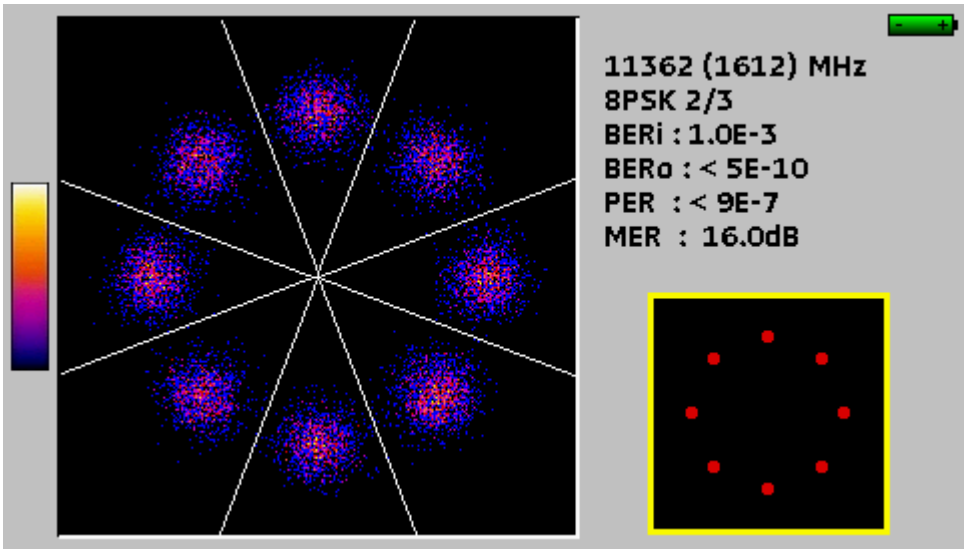
These measurements are available if one of these standards is running in the **Level measurement** page.

- DVB-T/H (TM06, STM46)
- DVB-S, DSS, DVB-S2 (SM08, STM46)

The appliance displays the **Constellation** of the current signal.







Informations on the right of the **Constellation** diagram are the same as in the **Error rate** function:

- current frequency
- constellation
- symbol rate
- error rate and MER.

12 Echo - Guard interval (TM06-STM46)

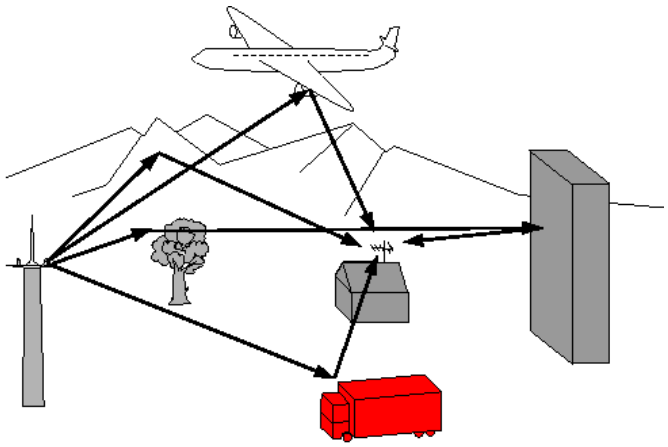
	Only available if the current standard is DVBT/H and if the appliance is TM06 or STM46

Pushing several times on the Measurement key give you access to the **ECHO** function.

The Validation key enables you to change the horizontal scale.

A yellow line marks the end of the guard interval.

Remember: In terrestrial TV broadcasting, the received signal on the antenna comes from several possible ways: the **echoes**.



In analogical TV, these echoes disturb the reception and degrade the image.

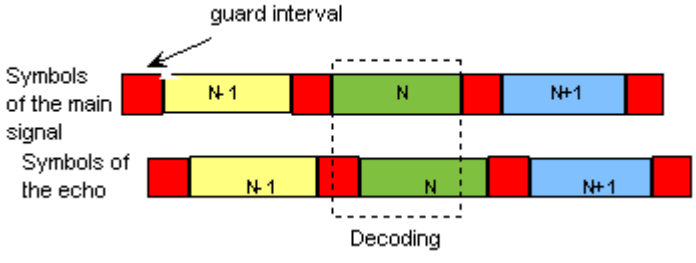
In digital TV DVB-T, these echoes may help or degrade the image according to the time delay between the various signals that reach the antenna.

The broadcasting norm DVB-T defines a modulation parameter called "**guard interval**" where echoes won't disturb the reception.

The transmission of digital data (**Symbol**) is interrupted during the **guard interval**.

A delayed (or advanced) symbol of any **shorter** duration than the guard interval will not disturb the reception.

A delayed (or advanced) symbol of any **longer** duration than the guard interval will disturb the reception.



You have to reduce the level of reception of the echoes by orienting the antenna or by selecting a more directive antenna.

The **Echo** function of the appliance enables you to display possible **echoes** that disturb the received signal.

You can assess the relative amplitude in dB and the delay in µs (distance in km) in comparison with the main signal (0 pulse).

The yellow line shows the end of the interval guard.

The echoes (rays) beyond this line disturb the reception and must be as weak as possible.

13 Measurement map

Pushing several times on the Measurement key give you access to the **Measurement map** function.

This is an automatic measurement of the level and of the error rate of the setups in the list of measurements with an indication of the levels out of tolerance.

Measurement map ST-ETIENNE

freq.	std	RF	C/N	BERi	BERo	PER	MER
E50	DVB-T/H	56.6	>45.9	4.3E-5	<9E-8	<9E-5	33.0
E23	DVB-T/H	56.4	>42.0	5.4E-5	<9E-8	<9E-5	28.5
E39	DVB-T/H	60.1	>43.6	1.0E-4	<9E-8	<9E-5	32.8
E54	DVB-T/H	58.8	>44.4	2.5E-5	<9E-8	<9E-5	32.7
E29	DVB-T/H	51.0	>38.6	3.4E-4	<9E-8	<9E-5	27.8
E26	DVB-T/H	54.0	>46.6	1.6E-4	<9E-8	<9E-5	27.8
E35	L	69.6	>57.1				
E30	L	62.8	>55.3				
E33	L	68.0	>57.1				

1/15 .....

Measurement map ASTRA NUM

freq.	std	RF	C/N	BERi	BERo	PER	MER
11836 HL	DVB-S	72.0	12.4	8.2E-6	<5E-9	<9E-6	14.1
11568 VL	DVB-S	74.7	10.0	Sync?	Sync?	Sync?	--.-
11597 VL	DVB-S	74.2	10.0	<1E-7	<5E-9	<9E-6	15.7
11817 VH	DVB-S	74.4	12.7	1.6E-7	<5E-9	<9E-6	15.0
12552 VH	DVB-S	71.1	11.0	<1E-7	<5E-9	<9E-6	15.9
11954 HH	DVB-S	74.7	13.1	3.8E-5	<5E-9	<9E-6	13.1
12324 VH	DVB-S	72.9	10.3	3.6E-5	<5E-9	<9E-6	13.1

2/11 ..

BERi, **BERo** and **PER** are generic acronyms (frequently used)

BERi = BER in = inner BER
first BER treated by the demodulator (BER channel, CBER, LDPC)
BERo = BER out = outer BER
last BER treated by the demodulator (BER Viterbi, VBER, BCH)
PER = packet error rate
uncorrected packet, lost packet, erroneous packet (UNC, PER)

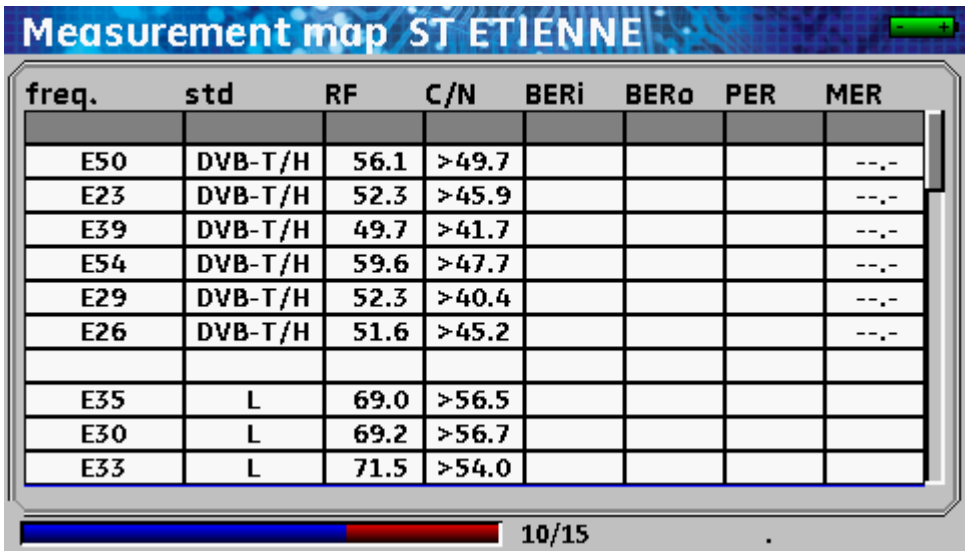
Important

A bar graph below the Measurement map allows you to observe the progression of the scan.

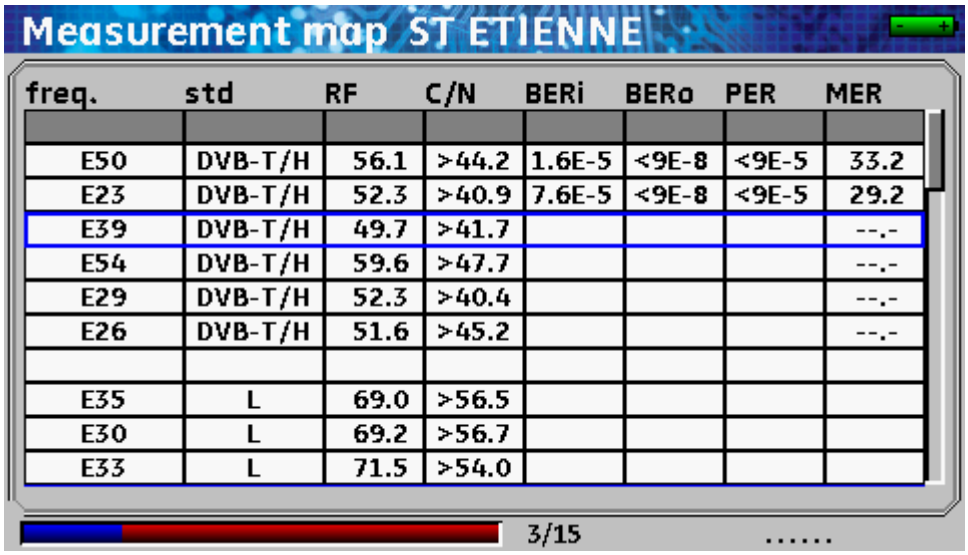
The **background** colour of this bar graph tells you that a complete scan has been made (for example for a save):

- **red**: the Measurement plan has not been totally scanned
- **green**: the Measurement plan has been totally scanned

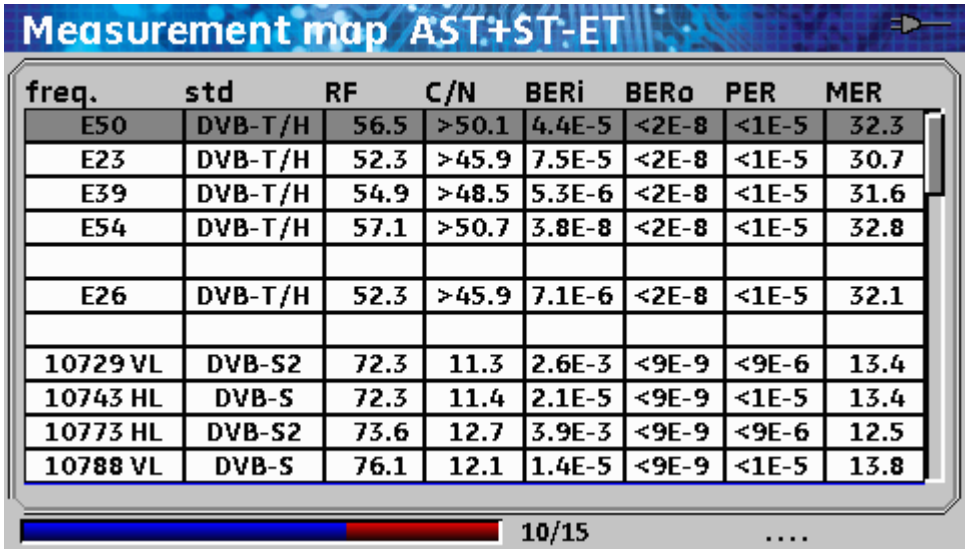
For a quick view, only the levels and C/N of each Setup are measured at the first scan.



Then, the error rates of the Setups under the digital standards are measured.



STM46 model allows mixing satellite and terrestrial setups:

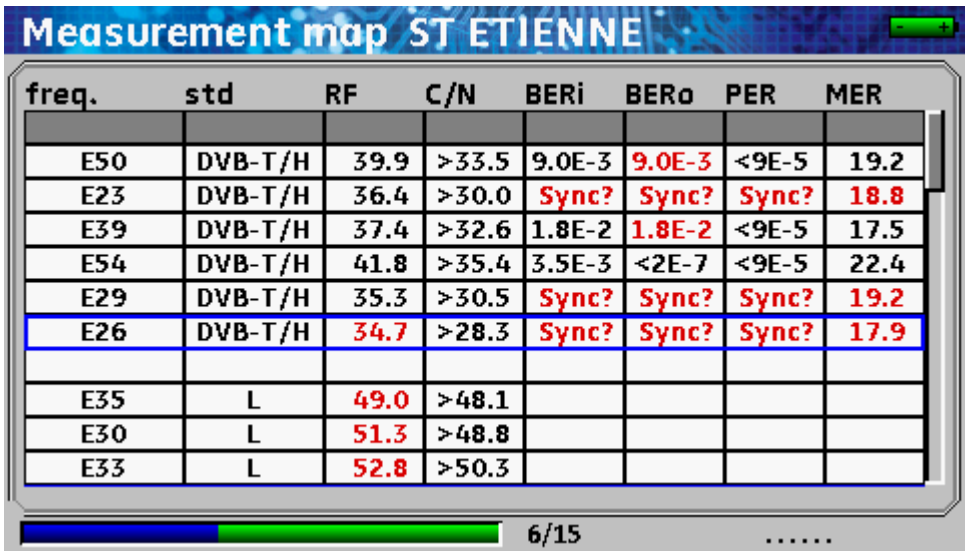


In this case, satellite remote supply has the first priority. (Terrestrial remote supply is ignored)

13.1 Values out of tolerance

A coloured frame around the values changes according to the decision **Thresholds**:

- **red** for values below the **min**. **Threshold**
- **orange** for values above the **max. Threshold**



14 Image and Sound

Pushing the TV key gives you access to the **Image and Sound** function.

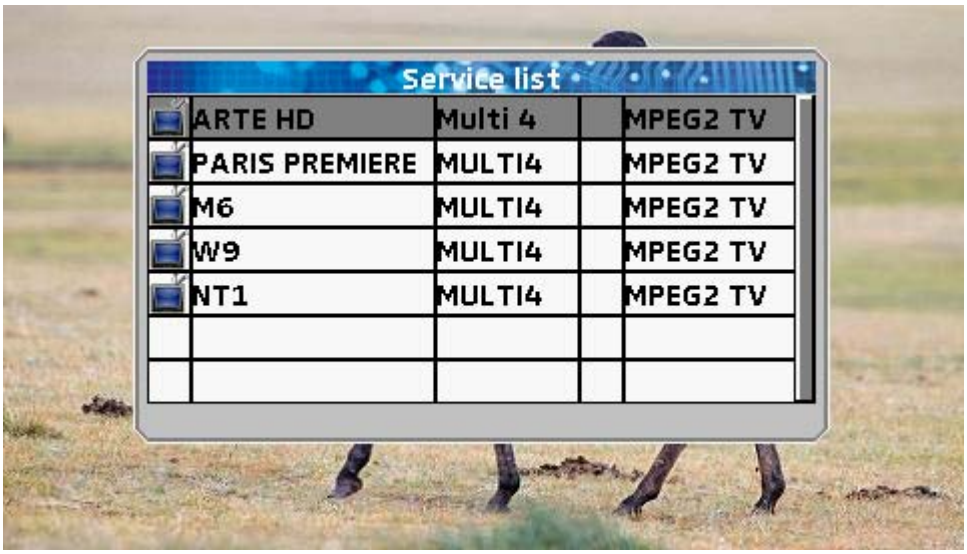
14.1 Digital TV

The name of the service and its main characteristics are displayed on the right top of the screen.

- 1440x1080i : resolution of the picture 1440 pixels / line, 1080 lines, interlace scan
- 25 Hz : frame frequency
- H.264 : picture compression
- Video Rate 7.455 MBits/s : snapshot binary rate of the service
- Audio MPEG Layer II : sound compression

14.2 Service list

Pushing twice on the TV key gives you access to the list of services



Use the knob and the Validation key to change of service

The provider and the type of service are specified

TV

Radio

Data

Encrypted service

14.3 Setup change

Pushing three times on the TV key

enables you to change the setup.

Use the Validation key, then use the knob to change of setup

14.4 Audio

The appliance can decode the following digital sounds:

MPEG-1 L1/L2

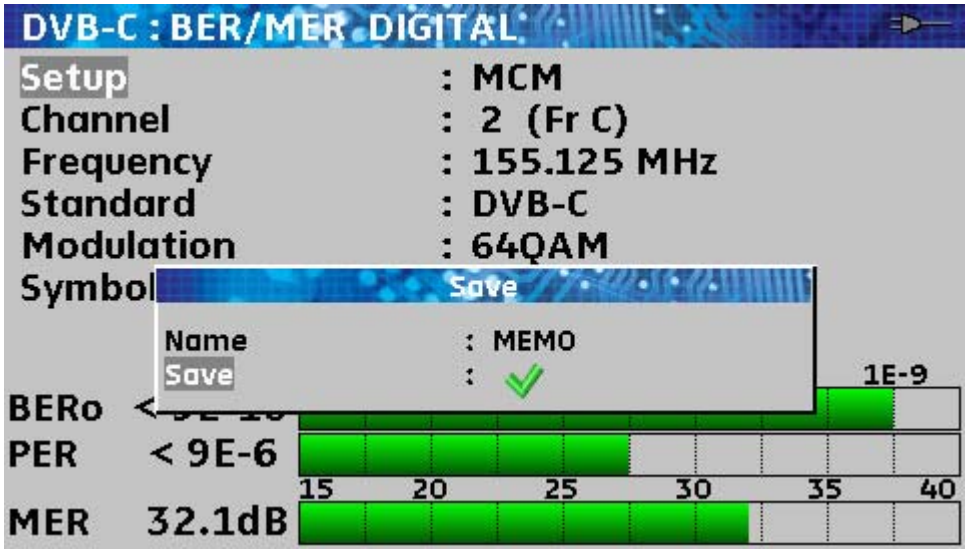
AAC	Advanced Audio Coding	License Via Licensing
HE-AAC	High Efficiency AAC	License Via Licensing
Dolby Digital		License Dolby®
Dolby Digital Plus		License Dolby®

Produced under **licence** of **Dolby** Laboratories.

Dolby and the double-D symbol are trademarks of **Dolby Laboratories**.

15 Saving

Pushing the Toolbox key enables you to **Save** the measurement values.



	You will be able to use the saved values, after transfer, to create measurement reports on your computer (see the Memories paragraph for more details).

A window opens on the current screen and suggests a file name.

You can directly **Save** a file using the suggested name or change it.

After changing the file name, move to the Save line and push the Validation key.

See the Acquisition of a name paragraph for more details.

	When you turn off the appliance, the complete shut-off will last a few seconds because of a saving on a flash memory.

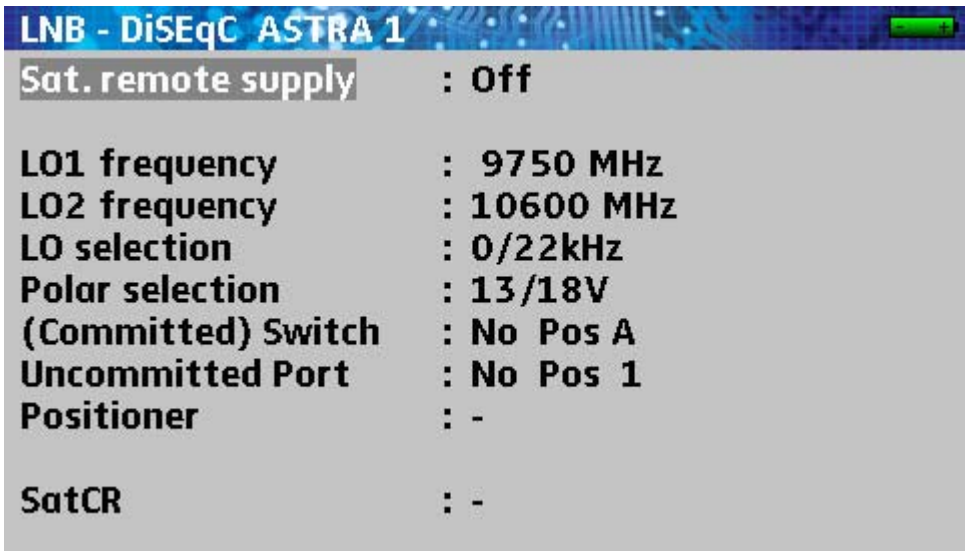
16 Remote supply / LNB – DiSEqC

Pushing several times on the Toolbox key give you access to the configuration of the remote supply:

16.1 Terrestrial band (TM06)

Remote supply: on / off
Selection of the voltage of the remote supply among the values: 5V, 13V, 18V and 24V
See the Man-machine interface chapter for any modification.

16.2 Satellite band (SM08)

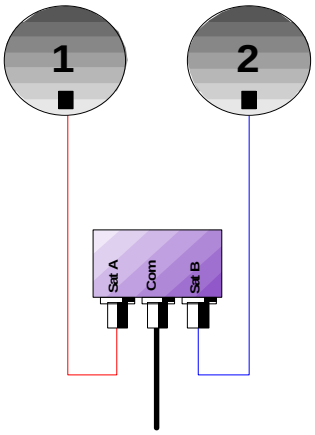

LNB - DiSEqC ASTRA 1
Sat. remote supply : Off
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : -

Configuration lines:

- Remote supply : turns on/off the remote supply or automatic mode
- OL1 frequency : OL frequency lower band of the LNB
- OL2 frequency : OL frequency higher band of the LNB
- OL selection : band commutation on the LNB (22kHz, ToneBurst or DiSEqC)
- Polar selection : polarization commutation on the LNB (13/18V or DiSEqC)
- Switch : switch, type and position (Name, ToneBurst, 22 kHz, DiSEqC, Pos A, B, C or D)
- Uncommitted : "uncommitted" switch, type et position (No, DiSEqC, Pos 1 to 16)
- Positioner : Presence of a positioner (Yes / No)
- Satellite # : Current position (from 1 up to 127 pre-loaded positions in the positioner)
- SatCR : SatCR mode (single cable distribution)

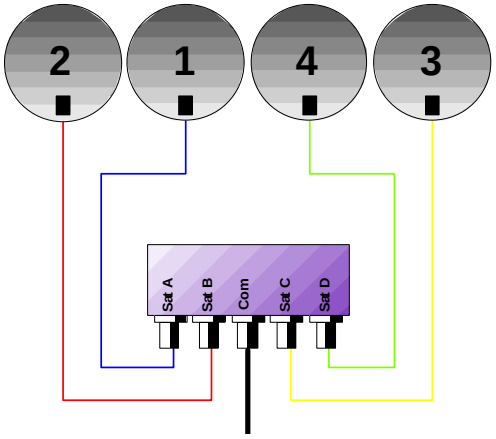
See the Man-machine interface chapter for any modification.

16.2.1 Switches



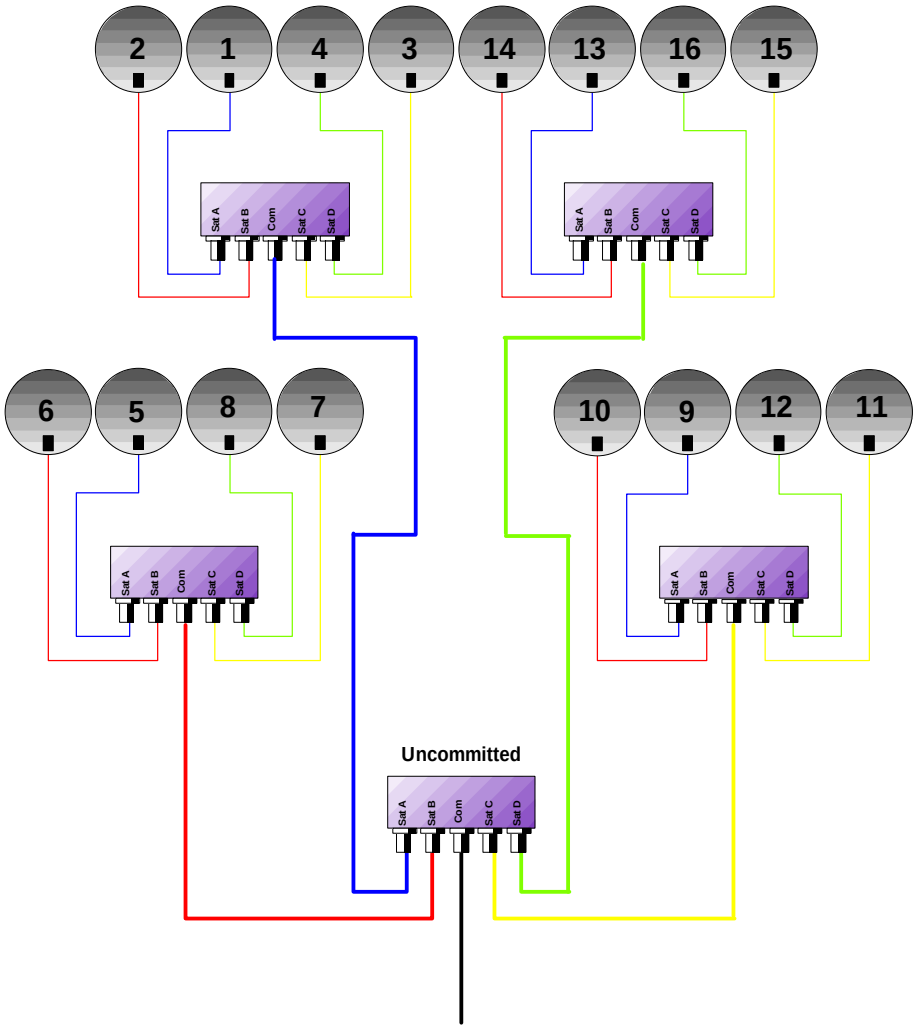
2-satellite switch

* 22 kHz
* ToneBurst (MiniDiSEqC)
*DiSEqC Committed or Uncommitted



4-satellite switch

* DiSEqC Committed or Uncommitted



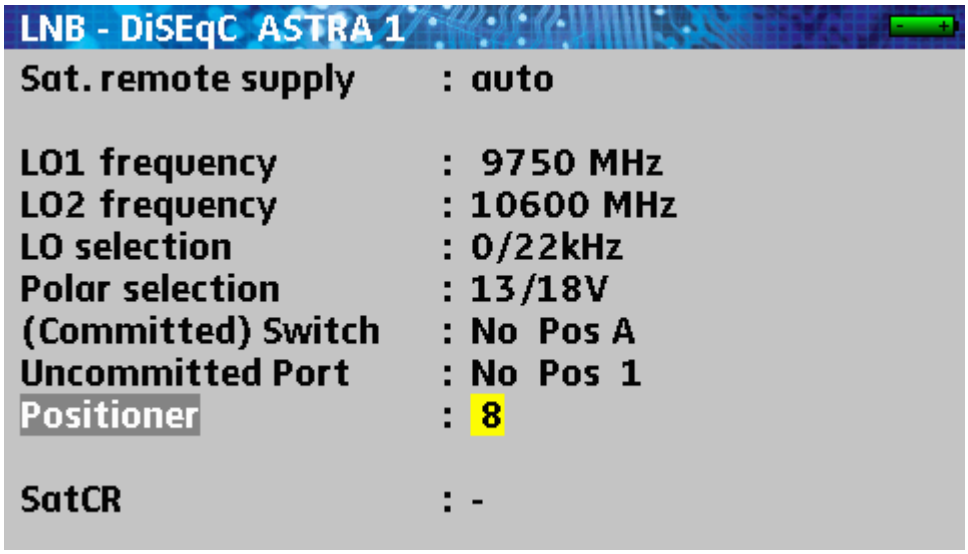
16-satellite switches

* DiSEqC Committed + Uncommitted

	Switch line		Uncommitted line	
Satellite	Position	Command DiSEqC	Position	Command DiSEqC
1	Pos A	Option A + Position A	Pos 1	Input 1
2	Pos B	Option A + Position B	Pos 1	Input 1
3	Pos C	Option B + Position A	Pos 1	Input 1
4	Pos D	Option B + Position B	Pos 1	Input 1
5	Pos A	Option A + Position A	Pos 2	Input 2
6	Pos B	Option A + Position B	Pos 2	Input 2
7	Pos C	Option B + Position A	Pos 2	Input 2
8	Pos D	Option B + Position B	Pos 2	Input 2
9	Pos A	Option A + Position A	Pos 3	Input 3
10	Pos B	Option A + Position B	Pos 3	Input 3
11	Pos C	Option B + Position A	Pos 3	Input 3
12	Pos D	Option B + Position B	Pos 3	Input 3
13	Pos A	Option A + Position A	Pos 4	Input 4
14	Pos B	Option A + Position B	Pos 4	Input 4
15	Pos C	Option B + Position A	Pos 4	Input 4
16	Pos D	Option B + Position B	Pos 4	Input 4

16.2.2 Positioner

The appliance produces a DiSEqC command that orders the rotation of a motorized dish.


LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : 8
SatCR : -

Current position (from 1 up to 127 pre-loaded positions in the positioner): if the window shows a "–", the positioner is deactivated

See the Man-machine interface chapter for any modification.

16.2.3 SatCR mode

Description:

SatCR: Satellite Channel Router or Single Cable Distribution

Distribution of the satellite signal with only one coaxial cable in one-family house to 2, 4 or 8 different receptors.

You need a **coaxial cable per receptor** and a suitable installation (multiple LNB, Quattro and multi-switches) to give access to the whole spectrum and all polarizations to several receptors.

The SatCR mode is an extension of the DiSEqC protocol that enables the connection of several receptors on **only one coaxial cable**, no matter the band (H/L) and the polarization (H/V).

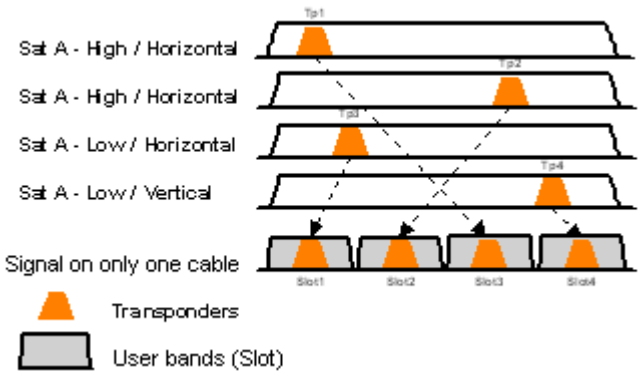
There is a norm for the European industry for the broadcasting of the satellite signals on only one cable - **EN50494**.

Functioning:

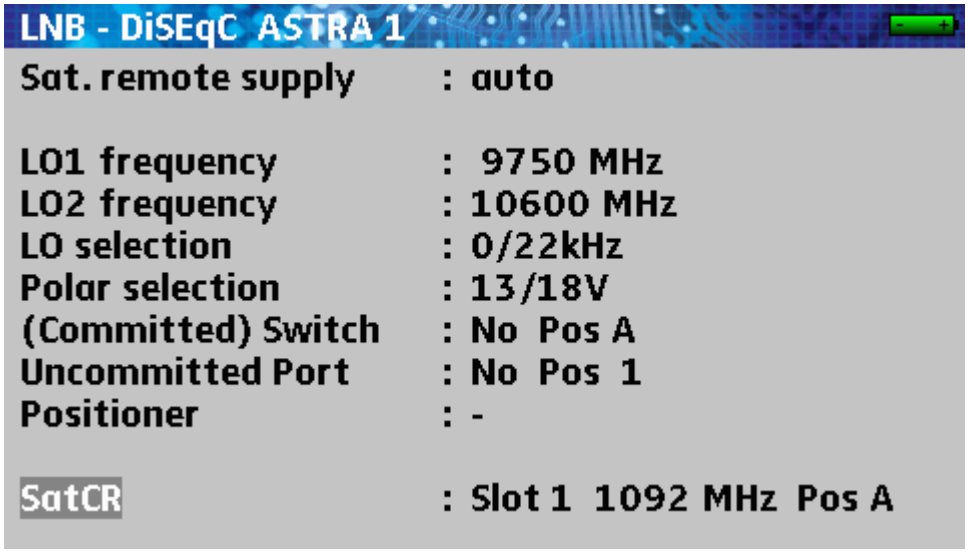
Each satellite receptor uses a fixed frequency band (**Slot** or **Port**), whose width is (more or less) equal to the transponder frequency bandwidth.

The receptor requires a specific transponder frequency (Ku frequency) via a DiSEqC command.

Some equipment at the dish (LNB or switch SatCR) moves the requested signal to the middle of the selected band (**Slot**). Then, the mixing equipment adds each user band (**Slot**) on only one output (up to 8 user bands).


Sat A - High / Horizontal
Sat A - High / Horizontal
Sat A - Low / Horizontal
Sat A - Low / Vertical
Signal on only one cable
Transponders
User bands (Slot)

Use:


LNB - DiSEqC ASTRA 1
Sat. remote supply : auto
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : Slot 1 1092 MHz Pos A

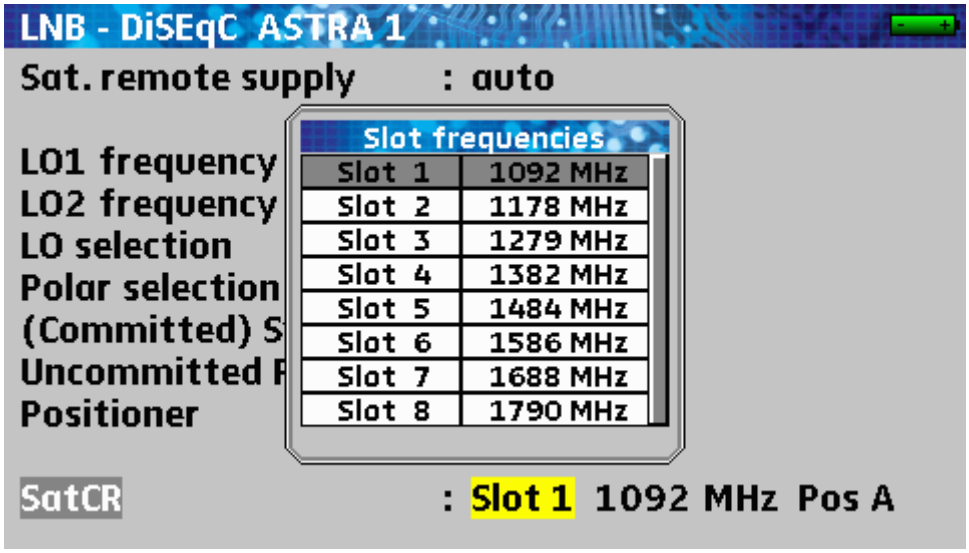
SatCR line:

- Slot 1 : selection of the SatCR slot; if the window shows a "–", the positioner is deactivated
- 1180 MHz : access to the adjustment of the frequency of the slots
- Pos A : selection of switch Pos A / Pos B

See the Man-machine interface chapter for any modification.

	The SatCR mode has priority over any other mode: polarization selection, OL selection, committed switches, uncommitted switches and positioner.

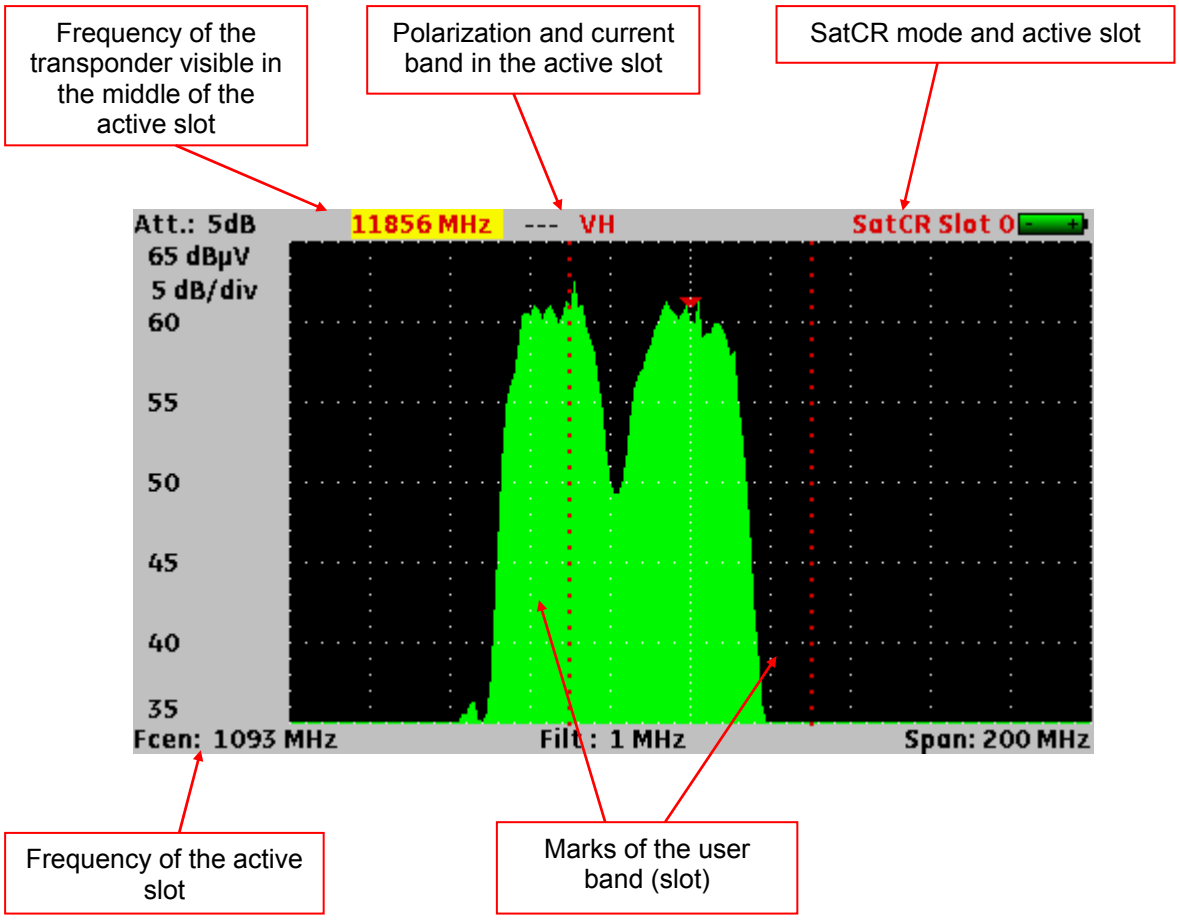
16.2.3.1 Automatic research of the frequencies of slots



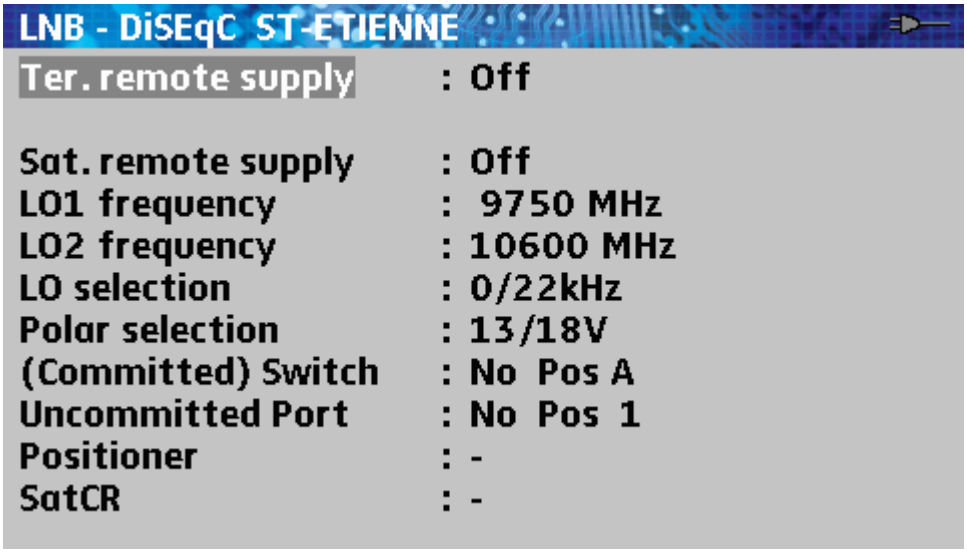
Push the Toolbox key: the list of all slot frequencies appears

Push the Toolbox key twice: an automatic research of these frequencies starts; the list is automatically completed

16.2.3.2 Influence of the SatCR mode on the spectrum analyzer



16.3 Terrestrial + satellite band (STM46)

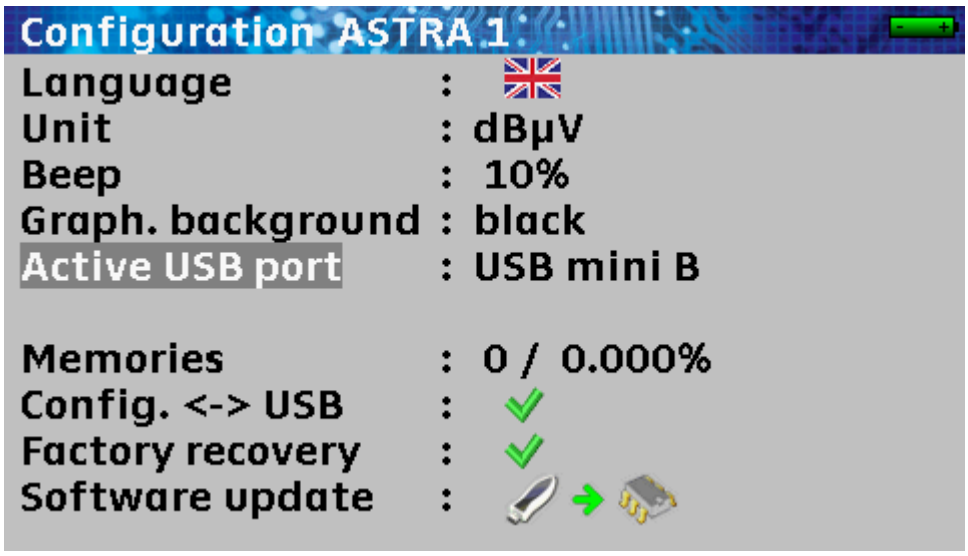

LNB - DiSEqC ST-ETIENNE
Ter. remote supply : Off
Sat. remote supply : Off
LO1 frequency : 9750 MHz
LO2 frequency : 10600 MHz
LO selection : 0/22kHz
Polar selection : 13/18V
(Committed) Switch : No Pos A
Uncommitted Port : No Pos 1
Positioner : -
SatCR : -

STM46 has the same functionalities than chapter 16.1 and 16.2.

	In measurement map mode (with satellite and terrestrial setups at the same time), satellite remote supply has the first priority (Terrestrial remote supply is ignored).

17 Configuration

Pushing several times on the Toolbox key give you access to the general **Configuration** of the appliance:



17.1 Language

Use the knob to change it.

17.2 Measurement unit

Use the knob to change it:

- **dBµV**: 0 dBµV matches 1 µV
- **dBmV**: 0 dBmV matches à 1 mV
- **dBm**: 0 dBm matches 274 mV : 1 mW in case of 75Ω impedance
- **V**: value in V, mV and µV according to the level

17.3 Sound level of the beep for the keys and the plotting

Use the knob to change it.

17.4 Background colour of the graphical pages

Use the knob to change the background colour of the graphs: **black**, **white** or **grey** (spectrum, constellation…)
This function spares ink from the printer when editing the reports.

17.5 Active USB port

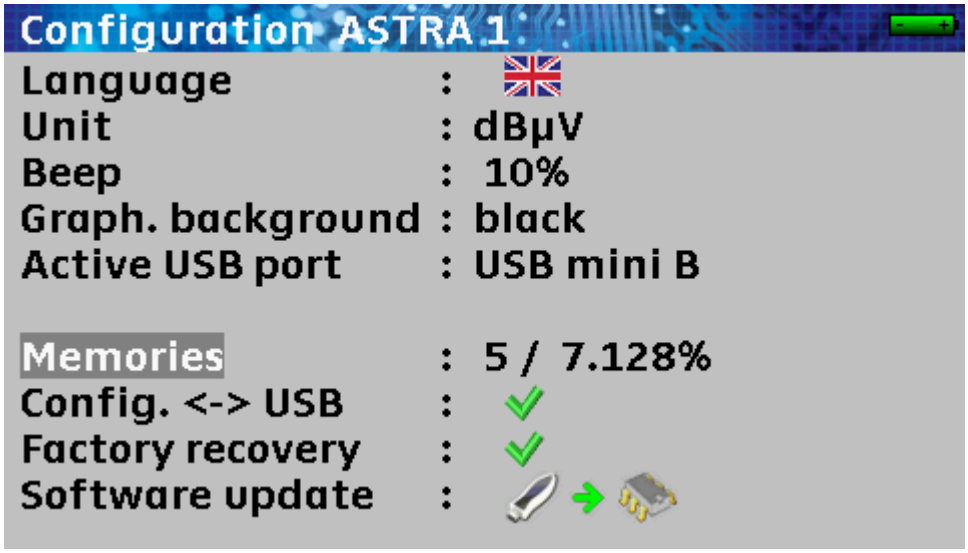
Use the knob to change it.

USB A: connection with an USB key for updating, configuration loading or memory issue.

USB mini B: connection with a computer via an adapted cable; the computer will recognize the appliance as an USB key: no driver is required.

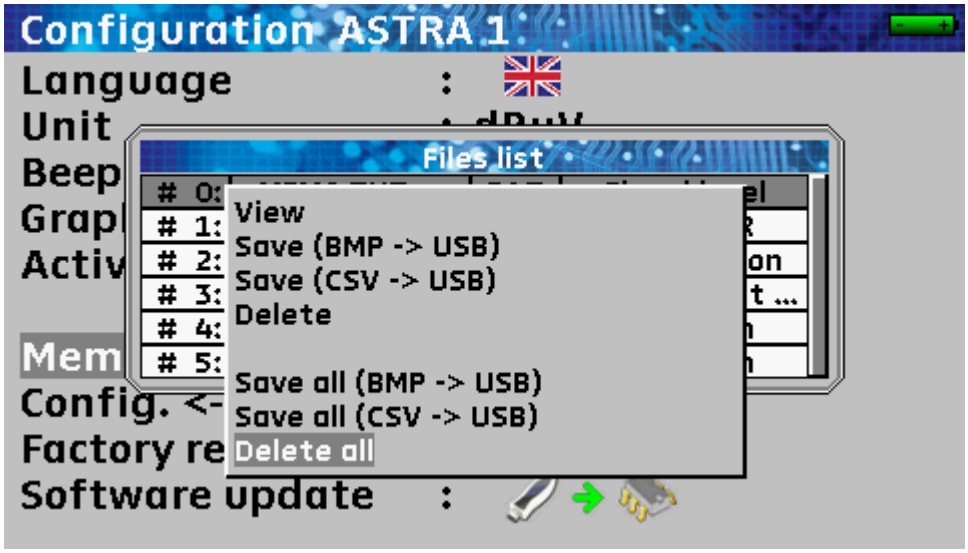
17.6 Memories

Display of the number of recorded files and their place in memory.



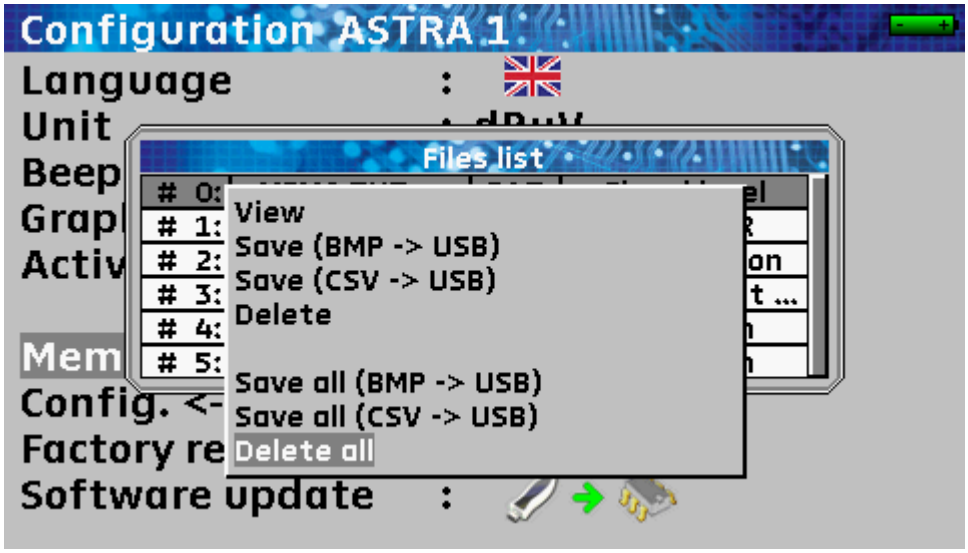
Pushing the Validation key unfolds the list of the previously recorded files.

The first column specifies the sequence number of the file; the second file specifies the name of the file; the third column specifies the TER terrestrial/cable measurement band or SAT satellite; the last column specifies the type of file: level, spectrum, measurement plan…

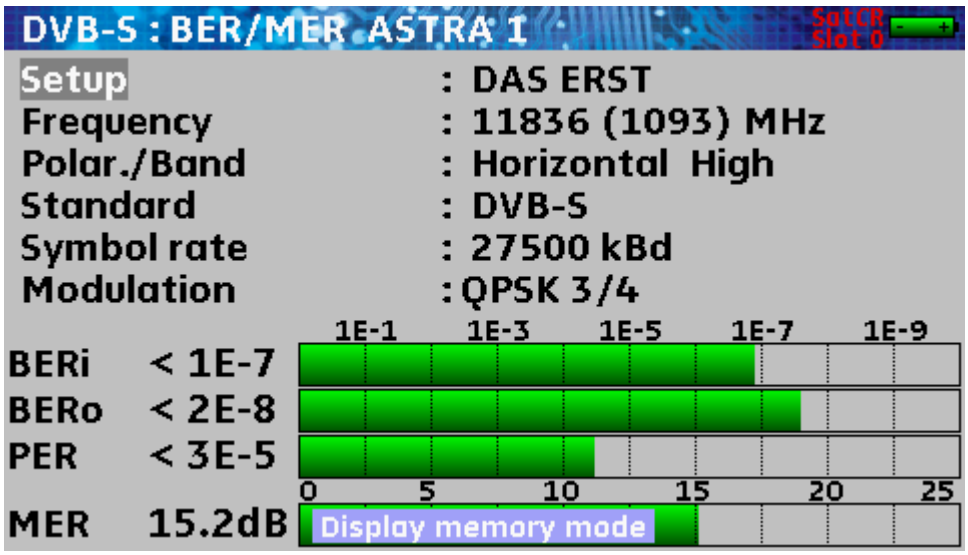


Rotate the knob to point at the file to work on. Pushing the Validation key

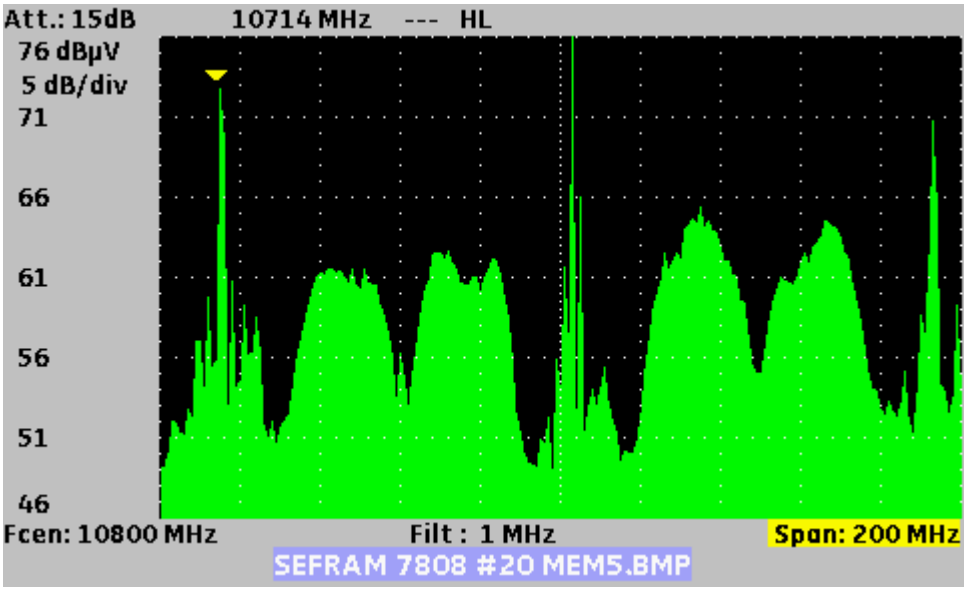
will display a list of possible actions.



View: Display of the content of the file



Save (-> USB BMP): exportation of the file to the USB key under BMP format (uncompressed graphical format) useful to import graphs into a report.



Save (-> USB CSV): exportation of the file to the USB key under CSV format (text file in columns separated with semicolons) useful to analyse values in a spreadsheet software.

SEFRAM 7808 #20 MEM5.CSV

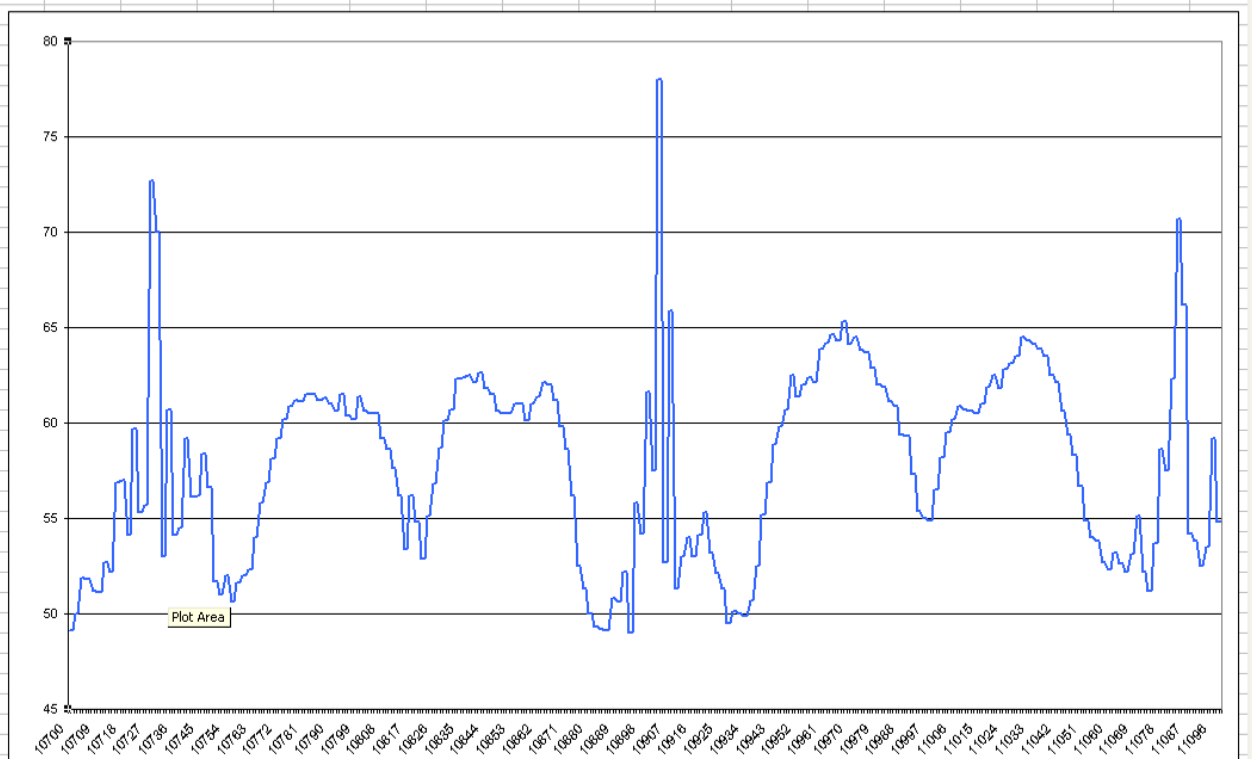
0 ASTRA 1 LO1 frequency: 9750 MHz LO2 frequency:10600 MHz LO selection:DiSEqC Polar selection:13/18V (Committed) Switch:DiSEqC Pos A Uncommitted Port:No Positioner:-

Spectrum

#3 EXTRA TV ASTRA 1 10714 (964) MHz HL DVB-S 22000 kBd

Fcen:	10800 MHz
Filt :	1 MHz
Span :	200 MHz
Att. :	15dB
Fcurs :	10714 MHz

Fr : (MHz)	dBµV
10700	49.1
10701	49.1
10702	50
10703	50
10704	51.9
10705	51.9
10706	51.8
10707	51.8
10708	51.2
10709	51.2
10710	51.1
10711	51.1
10712	52.7
10713	52.7
10714	52.2
10715	52.2
10716	56.9
10717	56.9
10718	57
10719	57
10720	54.1
10721	54.1
10722	59.7
10723	59.7
10724	55.3
10725	55.3
10726	55.7
10727	55.7
10728	72.7
10729	72.7
10730	70

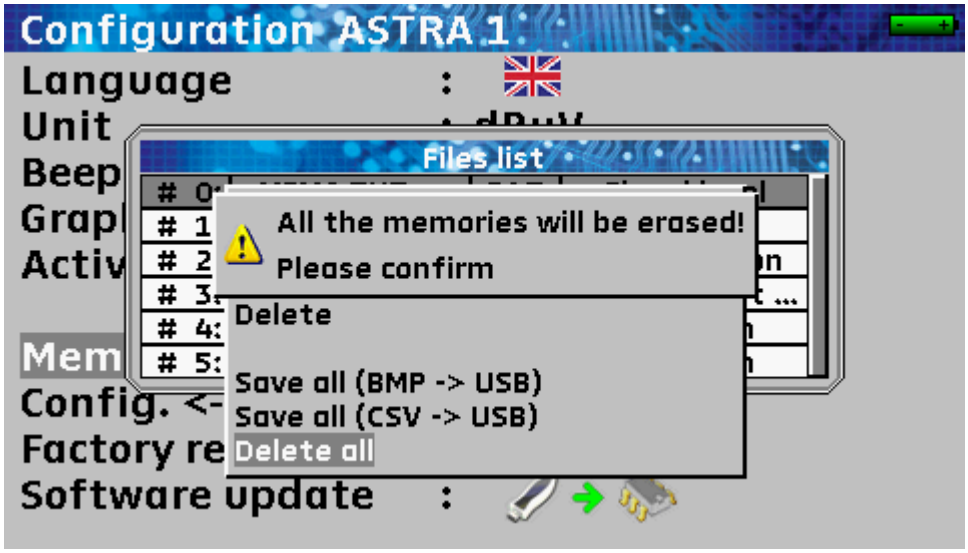


Save all (BMP -> USB): records all present files under BMP format into separated directories:

- LEVEL for level measurements
- MAP for measurement plans
- SPECTRUM for spectrum measurements
- BER-MER for measurements of error rates
- CONST for constellations
- ECHO for echoes.

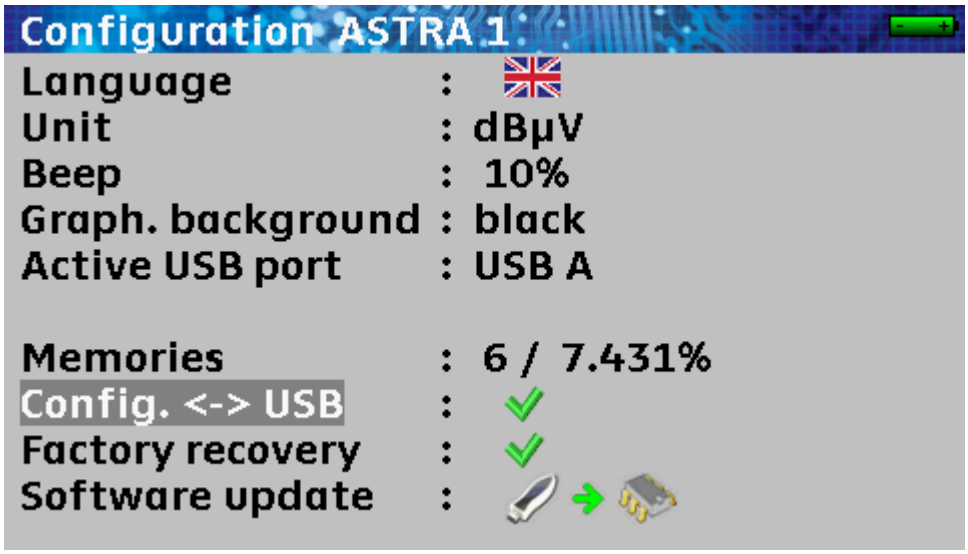
Save all (CSV -> USB): as previously, all files are recorded into directories, but under CSV format.

Delete: to erase the selected file
Delete all: to clean up the memory (with confirmation)



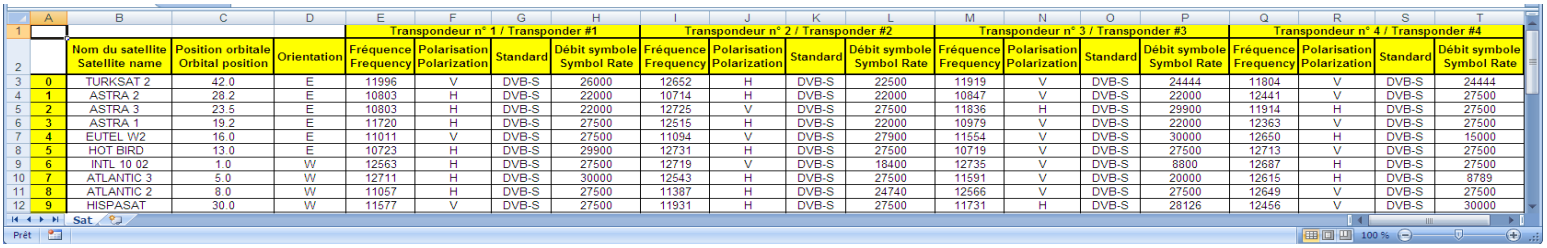
17.7 Configuration with USB key

You can update all or a part of the configuration of the appliance with a spreadsheet software and an USB key.



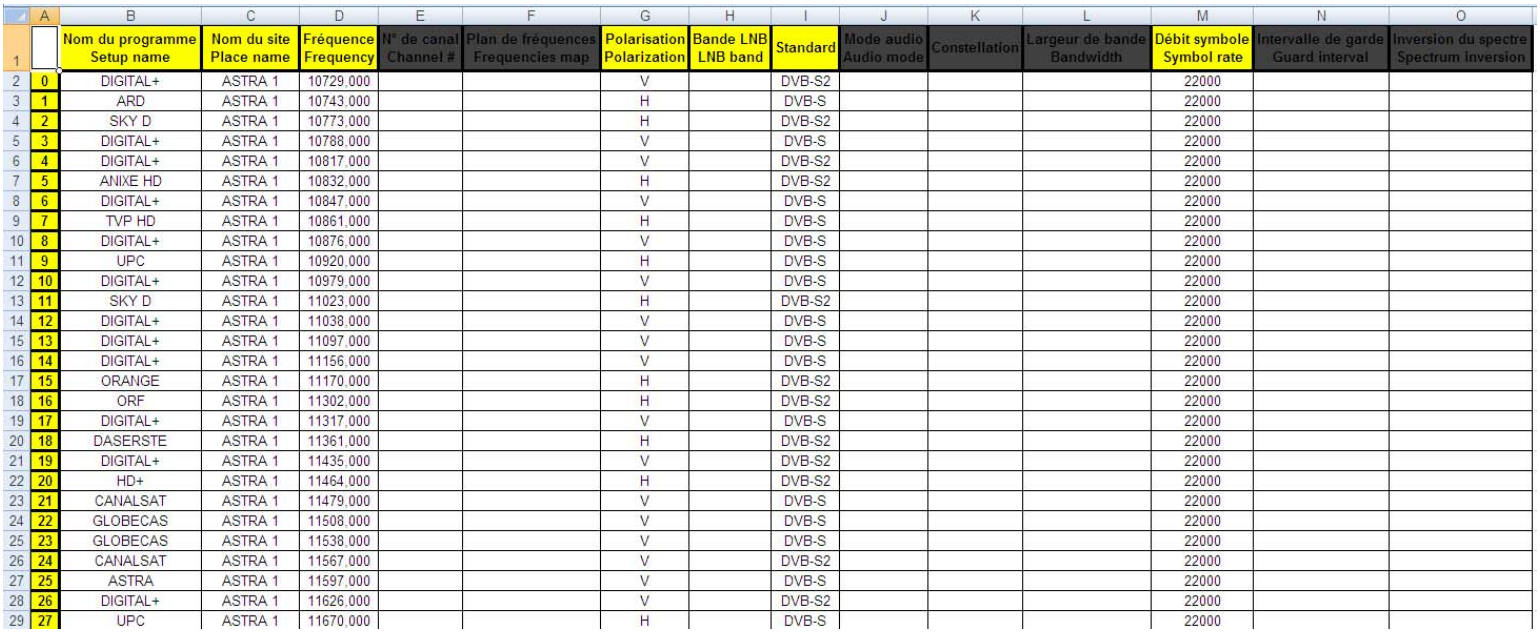
The configuration of the appliance is made of three different kinds of files:

- A satellite file for the plotting (see Dish adjustment)



		Nom du satellite Satellite name	Position orbitale Orbital position	Orientation	Transpondeur n° 1 / Transponder #1				Transpondeur n° 2 / Transponder #2				Transpondeur n° 3 / Transponder #3				Transpondeur n° 4 / Transponder #4			
					Fréquence Frequency	Polarisation Polarization	Standard	Débit symbole Symbol Rate	Fréquence Frequency	Polarisation Polarization	Standard	Débit symbole Symbol Rate	Fréquence Frequency	Polarisation Polarization	Standard	Débit symbole Symbol Rate	Fréquence Frequency	Polarisation Polarization	Standard	Débit symbole Symbol Rate
3	0	TURKSAT 2	42.0	E	11996	V	DVB-S	26000	12652	H	DVB-S	22500	11919	V	DVB-S	24444	11804	V	DVB-S	24444
4	1	ASTRA 2	28.2	E	10803	H	DVB-S	22000	10714	H	DVB-S	22000	10847	V	DVB-S	22000	12441	V	DVB-S	27500
5	2	ASTRA 3	23.5	E	10803	H	DVB-S	22000	12725	V	DVB-S	27500	11836	H	DVB-S	29900	11914	H	DVB-S	27500
6	3	ASTRA 1	19.2	E	11720	H	DVB-S	27500	12515	H	DVB-S	22000	10979	V	DVB-S	22000	12363	V	DVB-S	27500
7	4	EUTEL W2	16.0	E	11011	V	DVB-S	27500	11094	V	DVB-S	27900	11554	V	DVB-S	30000	12650	H	DVB-S	15000
8	5	HOT BIRD	13.0	E	10723	H	DVB-S	29900	12731	H	DVB-S	27500	10719	V	DVB-S	27500	12713	V	DVB-S	27500
9	6	INTL 10 02	1.0	W	12563	H	DVB-S	27500	12719	V	DVB-S	18400	12735	V	DVB-S	8800	12687	H	DVB-S	27500
10	7	ATLANTIC 3	5.0	W	12711	H	DVB-S	30000	12543	H	DVB-S	27500	11591	V	DVB-S	20000	12615	H	DVB-S	8789
11	8	ATLANTIC 2	8.0	W	11057	H	DVB-S	27500	11387	H	DVB-S	24740	12566	V	DVB-S	27500	12649	V	DVB-S	27500
12	9	HISPASAT	30.0	W	11577	V	DVB-S	27500	11931	H	DVB-S	27500	11731	H	DVB-S	28126	12456	V	DVB-S	30000

- A library setup file containing 1000 setups (see Library setups)



		Nom du programme Setup name	Nom du site Place name	Fréquence Frequency	N° de canal Channel #	Plan de fréquences Frequencies map	Polarisation Polarization	Bande LNB LNB band	Standard	Mode audio Audio mode	Constellation	Largeur de bande Bandwidth	Débit symbole Symbol rate	Intervalle de garde Guard interval	Inversion du spectre Spectrum inversion
2	0	DIGITAL+	ASTRA 1	10729,000			V		DVB-S2				22000		
3	1	ARD	ASTRA 1	10743,000			H		DVB-S				22000		
4	2	SKY D	ASTRA 1	10773,000			H		DVB-S2				22000		
5	3	DIGITAL+	ASTRA 1	10788,000			V		DVB-S				22000		
6	4	DIGITAL+	ASTRA 1	10817,000			V		DVB-S2				22000		
7	5	ANIXE HD	ASTRA 1	10832,000			H		DVB-S2				22000		
8	6	DIGITAL+	ASTRA 1	10847,000			V		DVB-S				22000		
9	7	TVP HD	ASTRA 1	10861,000			H		DVB-S				22000		
10	8	DIGITAL+	ASTRA 1	10876,000			V		DVB-S				22000		
11	9	UPC	ASTRA 1	10920,000			H		DVB-S				22000		
12	10	DIGITAL+	ASTRA 1	10979,000			V		DVB-S				22000		
13	11	SKY D	ASTRA 1	11023,000			H		DVB-S2				22000		
14	12	DIGITAL+	ASTRA 1	11038,000			V		DVB-S				22000		
15	13	DIGITAL+	ASTRA 1	11097,000			V		DVB-S				22000		
16	14	DIGITAL+	ASTRA 1	11156,000			V		DVB-S				22000		
17	15	ORANGE	ASTRA 1	11170,000			H		DVB-S2				22000		
18	16	ORF	ASTRA 1	11302,000			H		DVB-S2				22000		
19	17	DIGITAL+	ASTRA 1	11317,000			V		DVB-S				22000		
20	18	DASERSTE	ASTRA 1	11361,000			H		DVB-S2				22000		
21	19	DIGITAL+	ASTRA 1	11435,000			V		DVB-S2				22000		
22	20	HD+	ASTRA 1	11464,000			H		DVB-S2				22000		
23	21	CANALSAT	ASTRA 1	11479,000			V		DVB-S				22000		
24	22	GLOBECAS	ASTRA 1	11508,000			V		DVB-S				22000		
25	23	GLOBECAS	ASTRA 1	11538,000			V		DVB-S				22000		
26	24	CANALSAT	ASTRA 1	11567,000			V		DVB-S2				22000		
27	25	ASTRA	ASTRA 1	11597,000			V		DVB-S				22000		
28	26	DIGITAL+	ASTRA 1	11626,000			V		DVB-S2				22000		
29	27	UPC	ASTRA 1	11670,000			H		DVB-S				22000		

- Twenty files of measurement lists, fifty lines each (see Measurement lists)

	A	B	C	D	E	F	G	H	I
1	Nom de la liste / List name	ASTRA1+HOT							
2	Fréquence OL1 / LO1 frequency	9750							
3	Fréquence OL2 / LO2 frequency	10600							
4	Sélection OL / LO setup	DiSEqC							
5	Sélection polarisation / Polarization setup	DiSEqC							
6	Positionneur / Positioner								
7									
8		Numéro de programme Setup number	Switch committed Committed switch	Position Switch committed Committed switch position	Switch uncommited Uncommitted switch	Position switch uncommited Uncommitted switch position	Activation SatCR SatCR enabled	Numéro de slot Slot number	Switch SatCR SatCR switch
9	0								
10	1	1	DiSEqC	Pos A					
11	2	2	DiSEqC	Pos A					
12	3	3	DiSEqC	Pos A					
13	4	4	DiSEqC	Pos A					
14	5	5	DiSEqC	Pos A					
15	6	6	DiSEqC	Pos A					
16	7	7	DiSEqC	Pos A					
17	8	8	DiSEqC	Pos A					
18	9	9	DiSEqC	Pos A					
19	10	10	DiSEqC	Pos A					
20	11	11	DiSEqC	Pos A					
21	12								
22	13	18	DiSEqC	Pos B					
23	14	19	DiSEqC	Pos B					
24	15	20	DiSEqC	Pos B					
25	16	21	DiSEqC	Pos B					
26	17	22	DiSEqC	Pos B					
27	18	23	DiSEqC	Pos B					
28	19	24	DiSEqC	Pos B					
29	20	25	DiSEqC	Pos B					

Prog Lst00 Lst01 Lst02 Lst03 Lst04 Lst05 Lst06 Lst07 Lst08 Lst09 Lst10 Lst11 Lst12 Lst13 Lst14 Lst15 Lst16 Lst17 Lst18 Lst19

Prêt Moyenne : 10175 Nb (non vides) : 4 Somme : 20350 100 %

These files correspond with the tabs of the Sat.xls files (for the plotting), TConf.xls (for the terrestrial band) and SConf.xls (for the satellite). These files are available on VISIOSAT website: http://www.visiosat.com

The appliance is not directly compatible with these files. Anyway, you must save each tab as a CSV file (text file in columns separated with semicolons):

- One file S**at.csv** for the plotting
- One file TP**rog.csv** or **SProg.csv** for the setups
- Files TL**st00.csv, TLst01.csv, TLst02.csv …** for each measurement list.

There is a CSV macro-command that does it all: Ctrl + Shift + C on keyboard. (Office 2007 2010 only)

These CSV files must be copied to the root directory of an USB key.

Then, the USB key must be connected to the appliance.

Eventually, you only have to validate the transfer with the Validation key on the Config.<-> USB line.

During the transfer, the previous configuration of the appliance will be saved into the Conf directory:

- One file S**at.csv** for the plotting

- One file TP**rog.csv** for the setups
- Twenty files TL**st00.csv, TLst01.csv, TLst02.csv**…

	Terrestrial files for the TM06 have names beginning with T; ex.: TConf.xls, TProg.csv… Satellite files for the SM08 have names beginning with S. Satellite + terrestrial files for the STM46 have names beginning with ST.

	If there is no CSV file on the USB key, only the previous configuration of the appliance will be saved.

	You don't need to copy all the files into the USB key. ex.: if only the memory list #5 has changed, you only have to copy TLst05.csv.

	You can open the old CSV files with spreadsheet software. You can copy and paste values with the corresponding XLS.

	You can move the old CSV files from the Conf directory to the home directory of the USB key to transfer the configuration from an appliance to another.

17.8 Filling library setups with ini file

There is also an INI macro-command: Ctrl + Shift + I to insert setups to a selected cell from an ini file

When the macro command is executed, a Windows Explorer window opens and allows the selected file to import. Just click on the file you want to immediately incorporate into the setup library.

What is an « *.ini » file?

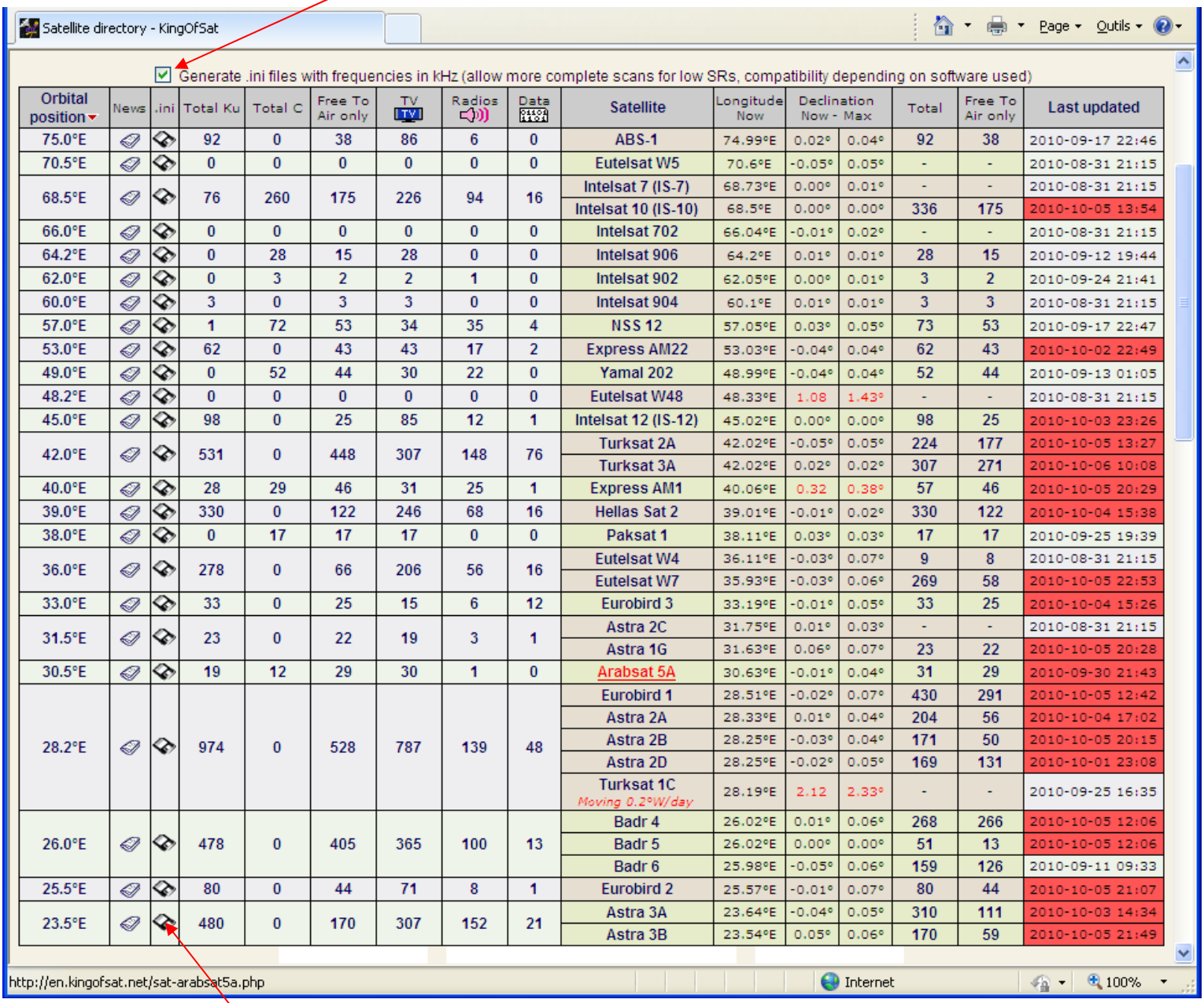
An « *.ini » file contains satellite's parameters in ACII format.

These files are available:

- on King of Sat website http://en.kingofsat.net/satellites.php for satellite

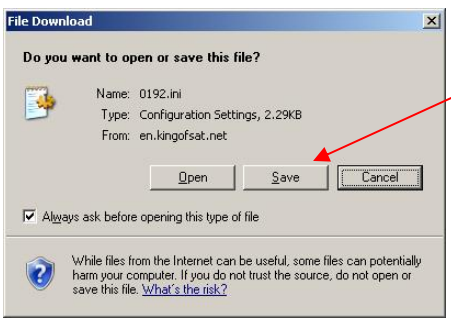
European satellite « *.ini » files can be downloaded. These files are updated regularly: So it's advised to go on this website to get the latest information.

It's advised to fill this tick box to get a better accuracy of the frequencies


Satellite directory - KingOfSat
Page
Outils
Generate .ini files with frequencies in kHz (allow more complete scans for low SRs, compatibility depending on software used)
http://en.kingofsat.net/sat-arabsat5a.php
Internet
100%

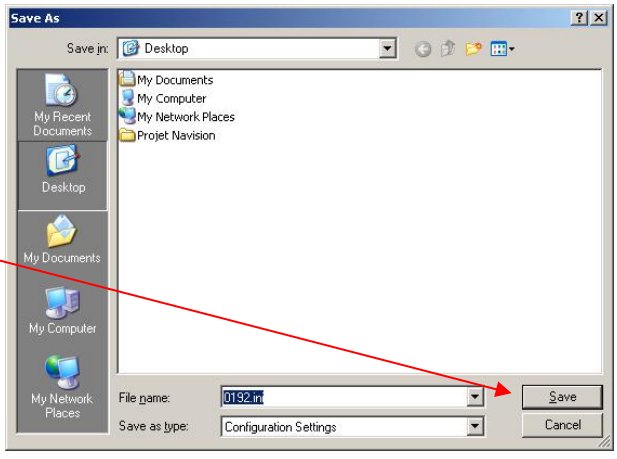
Orbital position	News	.ini	Total Ku	Total C	Free To Air only	TV	Radios	Data	Satellite	Longitude Now	Declination Now	Declination Max	Total	Free To Air only	Last updated
75.0°E			92	0	38	86	6	0	ABS-1	74.99°E	0.02°	0.04°	92	38	2010-09-17 22:46
70.5°E			0	0	0	0	0	0	Eutelsat W5	70.6°E	-0.05°	0.05°	-	-	2010-08-31 21:15
68.5°E			76	260	175	226	94	16	Intelsat 7 (IS-7)	68.73°E	0.00°	0.01°	-	-	2010-08-31 21:15
									Intelsat 10 (IS-10)	68.5°E	0.00°	0.00°	336	175	2010-10-05 13:54
66.0°E			0	0	0	0	0	0	Intelsat 702	66.04°E	-0.01°	0.02°	-	-	2010-08-31 21:15
64.2°E			0	28	15	28	0	0	Intelsat 906	64.2°E	0.01°	0.01°	28	15	2010-09-12 19:44
62.0°E			0	3	2	2	1	0	Intelsat 902	62.05°E	0.00°	0.01°	3	2	2010-09-24 21:41
60.0°E			3	0	3	3	0	0	Intelsat 904	60.1°E	0.01°	0.01°	3	3	2010-08-31 21:15
57.0°E			1	72	53	34	35	4	NSS 12	57.05°E	0.03°	0.05°	73	53	2010-09-17 22:47
53.0°E			62	0	43	43	17	2	Express AM22	53.03°E	-0.04°	0.04°	62	43	2010-10-02 22:49
49.0°E			0	52	44	30	22	0	Yamal 202	48.99°E	-0.04°	0.04°	52	44	2010-09-13 01:05
48.2°E			0	0	0	0	0	0	Eutelsat W48	48.33°E	1.08	1.43°	-	-	2010-08-31 21:15
45.0°E			98	0	25	85	12	1	Intelsat 12 (IS-12)	45.02°E	0.00°	0.00°	98	25	2010-10-03 23:26
42.0°E			531	0	448	307	148	76	Turksat 2A	42.02°E	-0.05°	0.05°	224	177	2010-10-05 13:27
									Turksat 3A	42.02°E	0.02°	0.02°	307	271	2010-10-06 10:08
40.0°E			28	29	46	31	25	1	Express AM1	40.06°E	0.32	0.38°	57	46	2010-10-05 20:29
39.0°E			330	0	122	246	68	16	Hellas Sat 2	39.01°E	-0.01°	0.02°	330	122	2010-10-04 15:38
38.0°E			0	17	17	17	0	0	Paksat 1	38.11°E	0.03°	0.03°	17	17	2010-09-25 19:39
36.0°E			278	0	66	206	56	16	Eutelsat W4	36.11°E	-0.03°	0.07°	9	8	2010-08-31 21:15
									Eutelsat W7	35.93°E	-0.03°	0.06°	269	58	2010-10-05 22:53
33.0°E			33	0	25	15	6	12	Eurobird 3	33.19°E	-0.01°	0.05°	33	25	2010-10-04 15:26
31.5°E			23	0	22	19	3	1	Astra 2C	31.75°E	0.01°	0.03°	-	-	2010-08-31 21:15
									Astra 1G	31.63°E	0.06°	0.07°	23	22	2010-10-05 20:28
30.5°E			19	12	29	30	1	0	Arabsat 5A	30.63°E	-0.01°	0.04°	31	29	2010-09-30 21:43
28.2°E			974	0	528	787	139	48	Eurobird 1	28.51°E	-0.02°	0.07°	430	291	2010-10-05 12:42
									Astra 2A	28.33°E	0.01°	0.04°	204	56	2010-10-04 17:02
									Astra 2B	28.25°E	-0.03°	0.04°	171	50	2010-10-05 20:15
									Astra 2D	28.25°E	-0.02°	0.05°	169	131	2010-10-01 23:08
									Turksat 1C *Moving 0.2°W/day*	28.19°E	2.12	2.33°	-	-	2010-09-25 16:35
26.0°E			478	0	405	365	100	13	Badr 4	26.02°E	0.01°	0.06°	268	266	2010-10-05 12:06
									Badr 5	26.02°E	0.00°	0.00°	51	13	2010-10-05 12:06
									Badr 6	25.98°E	-0.05°	0.06°	159	126	2010-09-11 09:33
25.5°E			80	0	44	71	8	1	Eurobird 2	25.57°E	-0.01°	0.07°	80	44	2010-10-05 21:07
23.5°E			480	0	170	307	152	21	Astra 3A	23.64°E	-0.04°	0.05°	310	111	2010-10-03 14:34
									Astra 3B	23.54°E	0.05°	0.06°	170	59	2010-10-05 21:49

For example, to download Astra 235°E « *.ini » file, click here.


File Download
Do you want to open or save this file?
Name: 0192.ini
Type: Configuration Settings, 2.29KB
From: en.kingofsat.net
Open
Save
Cancel
Always ask before opening this type of file
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

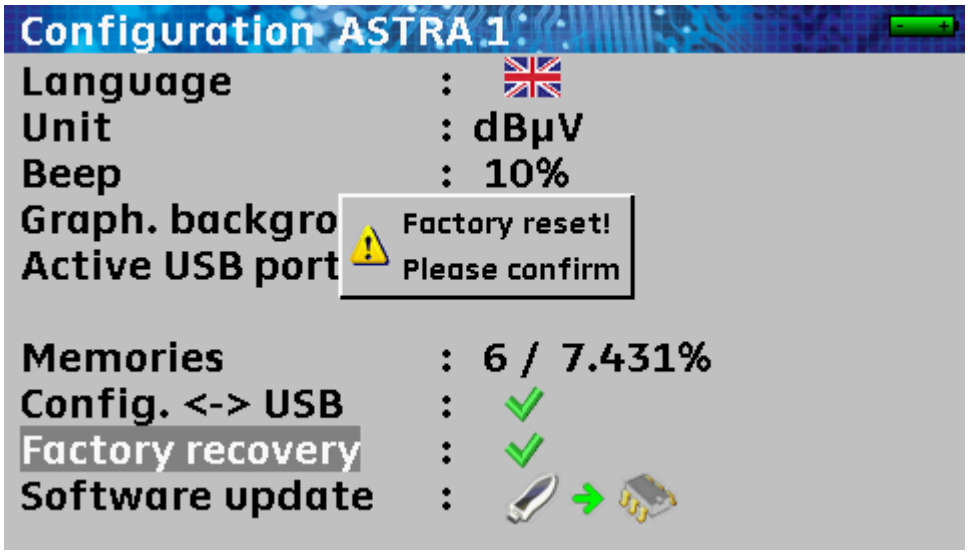
Then click on « *Save* ».

Select the destination directory and then, click on « *Save* ».



17.9 Factory reset

Complete reset of the appliance under default factory configuration with confirmation.



	Factory recovery erase : - The library of setups - The lists of measurements

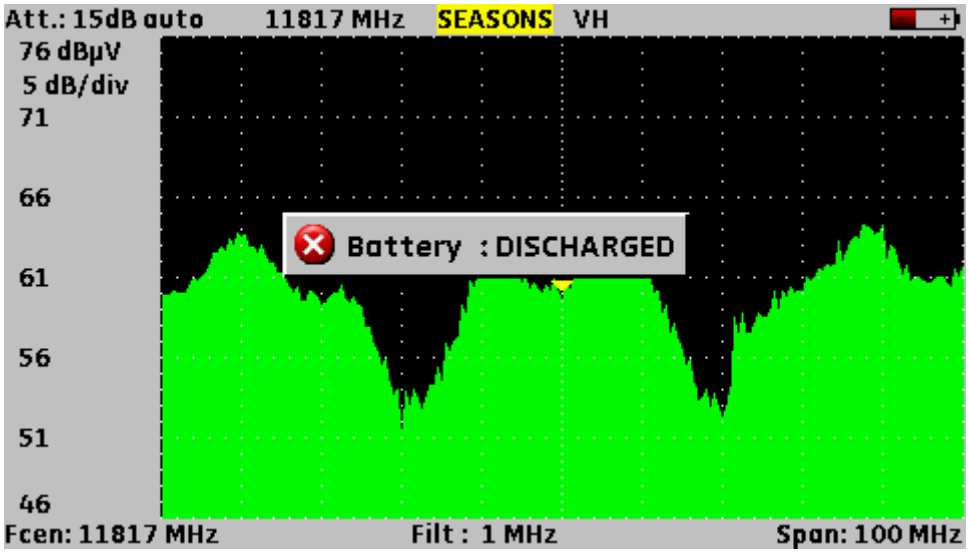
17.10 Update

Update of the software of the appliance with a USB key.
See the paragraph Updating the software for more details.

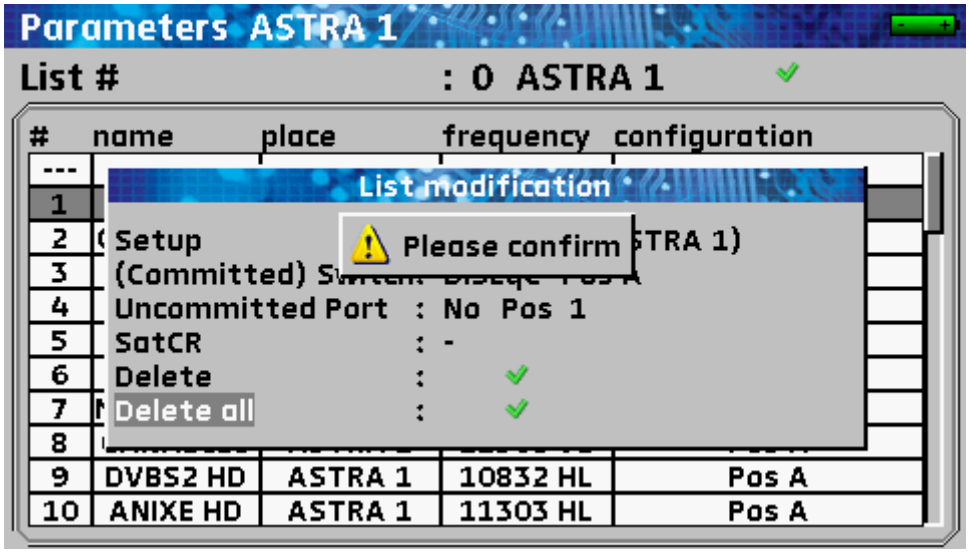
18 Displayed messages

The appliance can display messages while running.

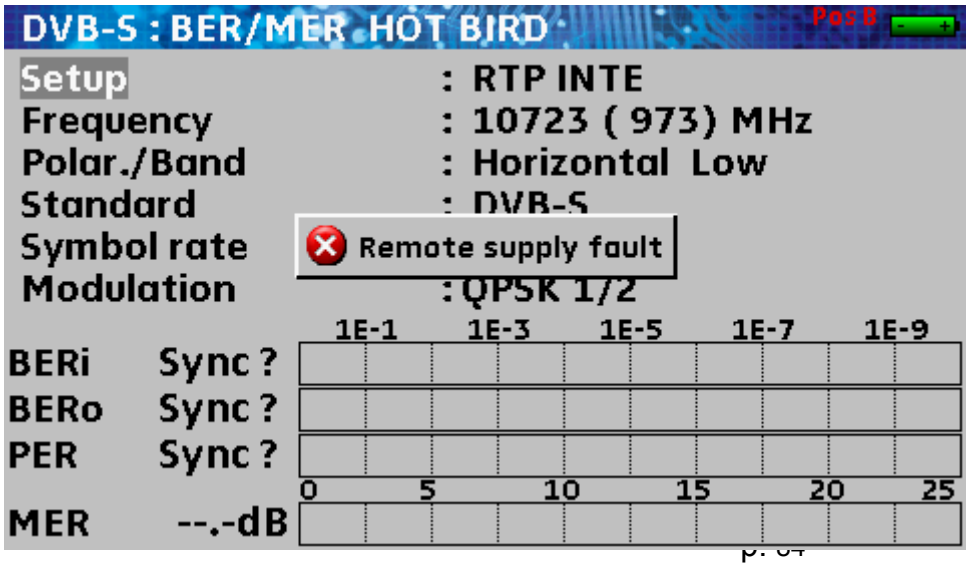
18.1 Alert messages



The battery is running out of power: the appliance will shut down in a few minutes.

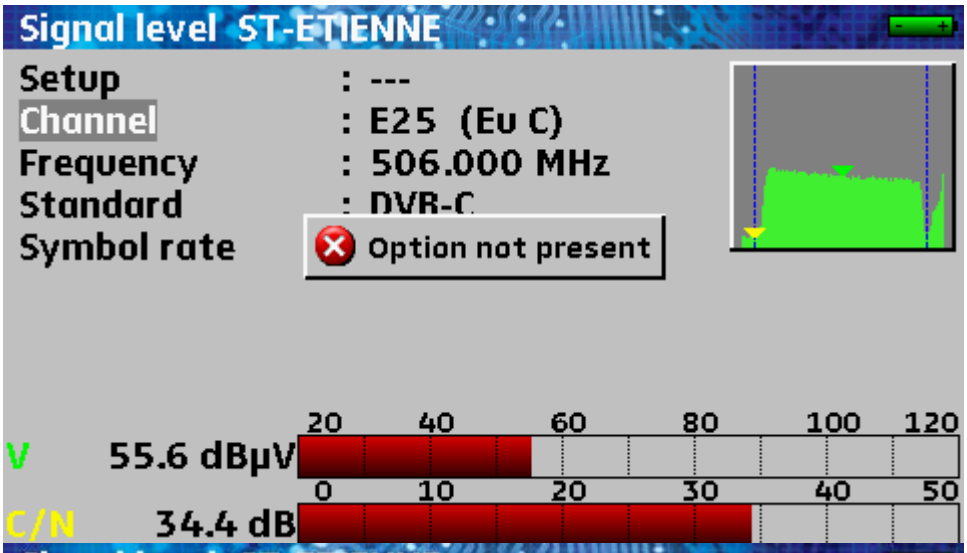

Parameters ASTRA 1
List # : 0 ASTRA 1
name place frequency configuration
List modification
Please confirm
Setup
(Committed)
Uncommitted Port : No Pos 1
SatCR : -
Delete :
Delete all :
9 DVBS2 HD ASTRA 1 10832 HL Pos A
10 ANIXE HD ASTRA 1 11303 HL Pos A

Confirmation request for some important action.

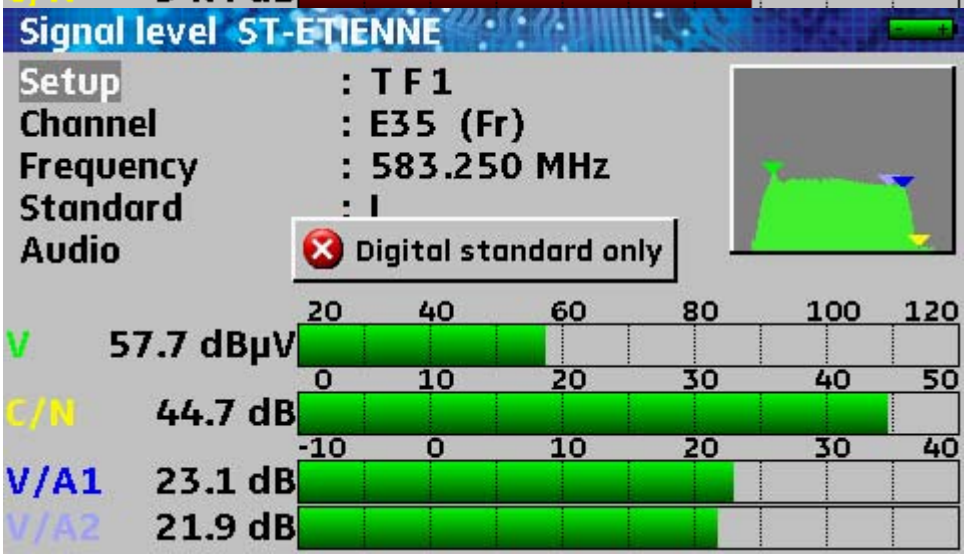


Fault of the remote supply: there is voltage on the cable or the max. authorized current has been exceeded.

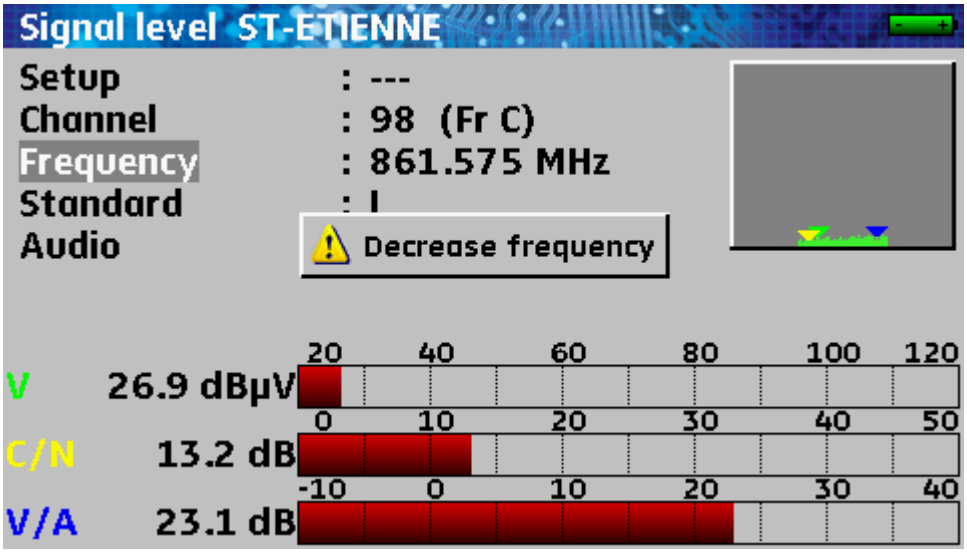
18.2 Impossibility messages



No DVB-C decoder on the TM06, thus no TV image



No analogical TV image



The appliance is trying to make a level measurement out of range (ex.: V/A measurement with a video carrier wave beyond channel 69)

18.3 Error messages

Message at the bottom of the screen.

It may appear after updating the software, else:
Contact the VISIOSAT technical support:

Tél. +33(0)5 65 35 82 20

E-mail : visiosat@visiosat.com

19 Maintenance

This appliance needs some maintenance in order to meet the requirements of use and maintain its characteristics.

	Consequence	**Suggested check period**	**Suggested using time limit**
BATTERY	Shorter autonomy		200 load/unload cycles or 2 years
STRAPS	Damage to the appliance	At each use: checking the holding of the straps	
Back Light SCREEN	Lesser vision		2 years
Measurement device Adjustment / Check	Wrong values	Once a year	18 months
CONNECTIONS	Wrong values	At each measurement	

These are manufacturer suggestions: VISIOSAT. should not be taken as responsible for them. They guarantee the best possible use and the preservation of the characteristics of the product.

Routine maintenance:

The routine maintenance is only to clean the casing of the appliance. Any other procedure requires some qualified personal.

Unplug the appliance before any maintenance procedure.

Do not let water flow into the appliance in order to prevent any risk of electrical shock.

Periodically clean the appliance; follow these instructions:

- use water and soap
- never use any product based on gasoline, benzine, or alcohol: they would damage the screen printings
- wipe with a soft lint-free cloth
- use an antistatic solvent-free product to clean the screen.

For the casing:

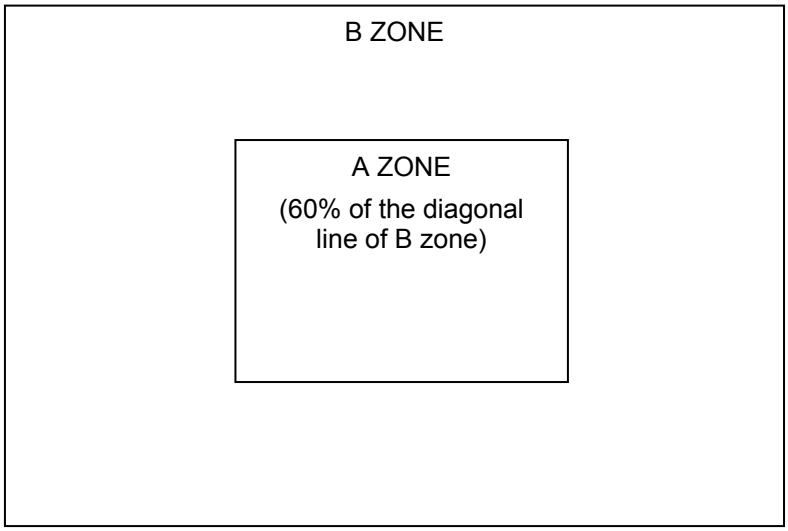
- Wipe with a clean cloth without using water
- Do not use solvents.

INFORMATION LCD COLOUR ACTIVE MATRIX SCREEN

Your Field Strength Meter VISIOSAT is equipped with a colour LCD screen with active matrix.

This screen is furnished by famous manufacturers. In the current technical conditions of production, these manufacturers cannot guarantee 100% good functioning pixels in the display area. They specify a number of defective pixels on screen.

The quality service VISIOSAT has conditioned the mounting of the display of your instrument to the respect of the manufacturer's acceptation conditions.



Acceptation criteria

A zone (central area): total less than 5 defective pixels, less than 3 adjacent defective pixels.

B zone (total surface of the screen): less than 9 defective pixels on the whole surface of the screen, with respect of the conditions for the A zone.

A defective pixel is a dot on screen that remains off at power on or whose colour is different than expected.

The contract guaranty applies to you field meter only if the above defined criteria are not fulfilled, either at delivery or during the guaranty period.

20 Technical data

20.1 Common technical characteristics

Frequency:

Ranges: 45MHz to 865MHz, terrestrial band TM06
950MHz to 2150MHz, satellite band SM08
45MHz to 865MHz, terrestrial band
950MHz to 2150MHz, satellite band
} 7846

Resolution: terrestrial: 50 kHz in measurement
satellite: 1MHz in measurement

Level measurement:

Frequencies	45-865MHz	950-2150MHz
Dynamics	20-120dBµV	40-110 dBµV (120 dBµV typical)
Accuracy @ 23°C ±5°C	± 1dB typical ± 2dB max.	± 1dB typical ± 2dB max.
Accuracy from -5°C to +45°C	± 4dB max.	± 4dB max.

Units: dBµV, dBmV, dBm or Volt
Resolution: 0.1dB
Measurement filters: terrestrial 300 kHz
satellite 1MHz
Input: 75Ω BNC
Max. allowable level: 80VDC, 48Vrms / 50Hz
Standards: terrestrial B, G, D, K, I, L, M, N, FM, DVB-T/H
satellite PAL, SECAM, NTSC, DVB-S2, DVB-S, DSS
Measurements: peak, average or effective power
Display: digital and bar graphs

Spectrum analysis:

Filters: terrestrial 300 kHz
satellite 1MHz
Attenuator: 0 to 60dB (in 10dB-steps)
Dynamics (display): 60dB
Span: 0, 5, 10, 20, 50, 100, 200, 500, 1000MHz and full
Number of dots: 400

Scan speed: terrestrial 150ms
satellite 350ms

Measurement plan (data logger):

Capacity:	polling max. 50 setups
Display:	digital
Measurements:	level/power, C/N and error rates
	threshold detection

Memorization:

Saving:	internal on flash memory
Data:	frequency plans, measurements, spectrums, measurement plans, constellations, echoes
Capacity:	312 kBytes, max. 1000 files

Auxiliary inputs and outputs:

USB interface:	USB A and USB mini B
Input power supply:	jack 5.5mm, 15V max., 1A

20.2 DVB-S, DSS (SM08-STM46)

According to ETS 300-421

Frequencies:	950MHz to 2150MHz
Error rate:	before Viterbi (BERi)
	after Viterbi (BERo)
	after Reed Solomon (PER) (lost packets)
Modulation error rate:	0 to 20dB (MER)
Rate:	1 to 45 Ms/s
Modulation:	QPSK
Viterbi rate:	1/2, 2/3, 3/4, 5/6, 6/7, 7/8 (automatic)

Graphical display of constellation.

20.3 DVB-S2 (SM08-STM46)

Following ETS 302-307

Frequencies:	950MHz to 2150MHz
Error rate:	before LDPC (BERi)
	after LDPC (BERo)
	after BCH (PER) (lost packets)
Modulation error rate:	0 to 20dB (MER)
Rate:	QPSK 1 to 45Ms/s, 8PSK 1 to 45Ms/s
Modulation:	QPSK, 8PSK (automatic)
Punctuation:	QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (automatic)
	8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (automatic)

Graphical display of constellation.

20.4 DVB-T/H (TM06-STM46)

According to ETS 301-701

Frequencies:	45MHz to 865MHz
AFC:	± 167 kHz, ± 333 kHz, ± 500 kHz
Error rate:	before Viterbi (BERi)
	after Viterbi (BERo)
	after Reed Solomon (PER) (lost packets)
Modulation error rate:	0 to 35dB (MER)
Bandwidth:	5, 6, 7 or 8MHz
Carrier waves:	2k / 8k (automatic)
Constellation:	16QAM, 64QAM, QPSK (automatic)
Viterbi rate:	1/2, 2/3, 3/4, 5/6, 7/8 (automatic)

Graphical display of constellation.
Graphical display of echoes.

20.5 Demodulation image and sound

Audio:	digital TV sound AAC, HE-AAC, Dolby Digital, Dolby Digital Plus
Video:	digital TV image MPEG2, MPEG4 576i, 720p, unencrypted 1080i

20.6 Remote supply

Voltage:	5V, 13V, 18V and 24V
Current:	500mA max, 300mA max under 24V short-cut protection
Mini DiSEqC:	22 kHz ± 2 kHz, 0.6V peak to peak ± 0.1V
DiSEqC generator:	standard 1.2, motorized dish, committed and uncommitted switches
SatCR:	extension of protocol DiSEqC, 8 slots maximum

20.7 Power supply - Battery

External power supply:	mains block 100/240VAC, cable according to the country, jack 5.5mm, hole 2.1mm output 15V 1A max.
Non-removable battery:	Lithium-Ion 10.8V, 2.25 A.h (9V at the end of loading) 200 load/unload cycles
Autonomy:	3h30 TM06 2h15 SM08 2h10 STM46 } after complete loading (2h15 with shut-off appliance)

SM08 and STM46 with working remote supply (display of HD pictures).

20.8 Environment

Screen:	TFT colour 4.3 in. (16/9), back-lighted
Operating temperature:	-5°C to +45°C
Storing temperature:	-10°C to +60°C
CEM and security:	conformity CE NF-EN 61326 July 1997 + A1 October 98 + A2 edit September 2001 EN 55022 A2 version 2003 class B for autonomous appliance Immunity according to EN 61326-1 2006 NF-EN 61010-1 June 2001
Dimensions and weight:	ca. 192 x 200 x 102 1.5kg (battery included)

20.9 Accessories

Furnished with: a battery, a mains transducer, a F/F adapter, a F/BNC adapter and a user's manual on a CD-ROM.

Optional accessories:

- power supply from the cigar-lighter: ref. 978361000
- F/F adapter: ref. 213200014
- F/BNC adapter: ref. 213200015
- USB cable type A to mini B: ref. 978551100

Contact the VISIOSAT customer service.
http://www.VISIOSAT.com

20.10 Equivalence between V, dBµV, dBmV and dBm

dBµV (dBmV) is the logarithmic ratio between a measured voltage U_d and a reference voltage U_r.

The reference voltage is U_r = 1µV (1mV)

$N = 20 \log (U_d/U_r)$

dBm is the logarithmic ratio between a measured power P_d and a reference power P_r.

The reference power is P_r = 1mW @ 75Ω

$N = 10 \log (P_d / P_r)$ with $P_d = Ud^2 / 75$

U_d = 1µV	N = 0dBµV	N = -60dBmV	N = -108.75dBm
U_d = 1mV	N = 60dBµV	N = 0dBmV	N = -48.75dBm
U_d = 1V	N = 120dBµV	N = 60dBmV	N = 11.25dBm

20.11 Values to measure

Minimum and maximum values for a good quality of signal.

Measurements	Level, power (dBµV)		C/N (dB)	BER	MER (dB)	modulation
	mini	maxi				
Terrestrial						
Analogical TV	57	74	> 45	-	-	-
FM	50	66	> 38	-	-	-
DVB-T	35	70	> 26	BERo < 2^{E}-4	> 26	8K, 64QAM, 1/32, 2/3
Satellite						
Analogical TV	47	77	> 15	-	-	-
DVB-S, DSS	47	77	> 11	BERo < 2^{E}-4	> 11	QPSK, 3/4
DVB-S2	47	77	> 8	PER < 1^{E}-7	> 8	8PSK, 2/3

21 Terminology

2K/8K: The number of carrier waves of the DTT channel
The **8K** mode (6817 carrier waves in the channel, including 6048 carrying useful data)
The **2K** mode (1705 carrier waves in the channel, including 1512 carrying useful data)
For the same purpose, the 8K mode allows the selection of a larger guard interval than the 2K mode, thus a better resistance to echoes

8PSK:
A type of modulation identical to QPSK, but with an 8-possibility (3-bit) coding. This kind of modulation enables higher rates than QPSK and is compatible with DVB-S2.

BCH: Bose Chauhuri Houquenohem
Algorithm used to correct errors in transmissions of digital satellite DVB-S2 signals.

CHANNEL: Assignment of a number to the transmission frequency of an audio video signal. TV channels receive numbers. Specific to each country.

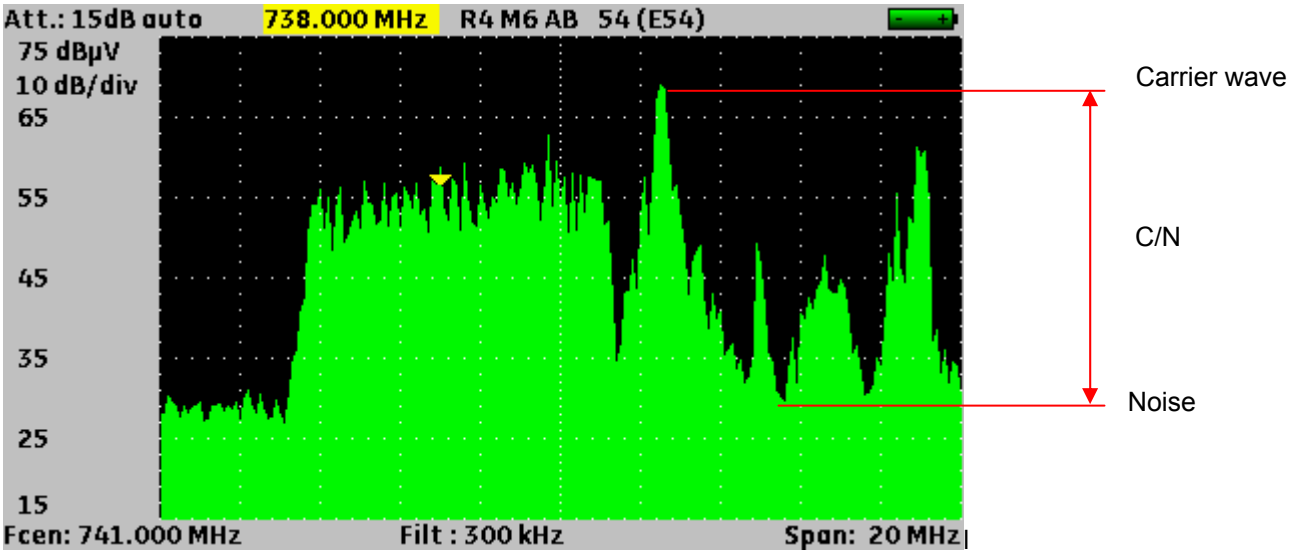
Example: from 21 to 69 for the UHF band

channel 21 = frequency 471.25MHz

CELL ID: Cell identification
Identification of the DVB-T emitter with 4 digits in hexadecimal format, which means 65536 possibilities.

C/N: Carrier to Noise ratio
A good C/N ratio helps the quality of the pictures on the TV screen. Ratio in dB.

Caution: You have to take the ratio analysis filter width / channel into account.



COFDM: Coded Orthogonal Frequency Division Multiplex.
Digital coding used for the DTT. Its principle is to transmit information via many carrier waves (2K or 8K mode)

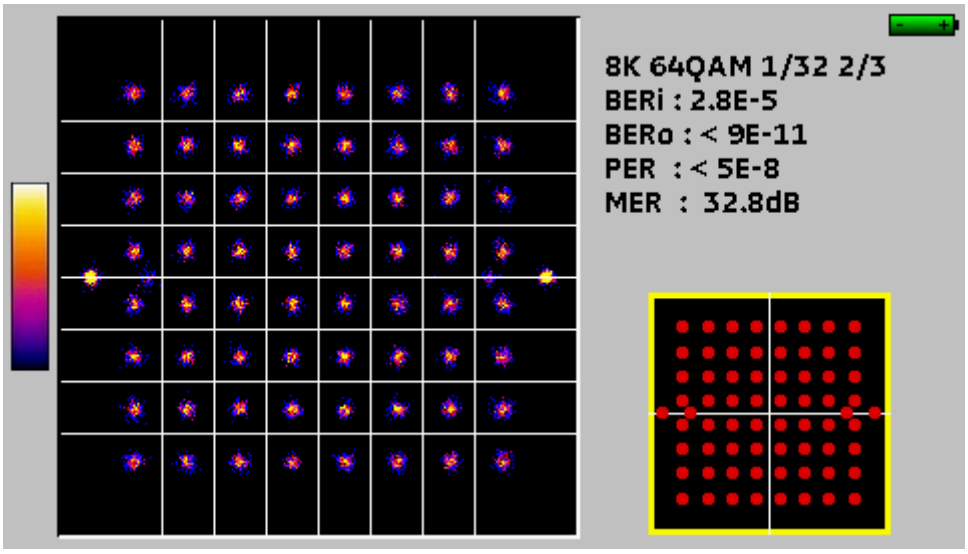
CONSTELLATION: Control mean for the quality of the signal by a group of points making spots on the screen of the field meter. **The more circular and distinct the spots of the constellation, the better the quality of the signal.** In addition, according to the shape of the spots, you can evaluate the kind of error. This function is available on field meters that enable the display of the constellation for any type of digital signal QAM, QPSK and COFDM.

Typically:
QAM (cable): 64 spots (16 spots per quarter)

COFDM (DTT): 64 spots (16 spots per quarter)

QPSK (Satellite) : 4 spots (1 spot per quarter)

8PSK (Satellite): 8 spots (on a circle)



COUNTER-POLARIZATION: Ratio between the levels received from the desired polarization and the opposed polarization (it should be as high as possible). To adjust the counter-polarization, you have to turn the head of the dish.

DAB: Digital Audio Broadcasting.
The Digital Audio Broadcasting is a standardized audio broadcasting system (coded in COFDM).

It exists on the following bands:

L band: 1452-1492MHz

3 band: 223-230MHz

DVB-T: Broadcasting norm for the terrestrial digital television, COFDM modulation

DVB-S: Broadcasting norm for the satellite digital television, QPSK modulation

DVB-S2: Broadcasting norm for the satellite digital television, QPSK or 8PSK modulation

DISEQC: Digital **S**atellite **Eq**uipment **C**ontrol.
Control norm for the equipment of reception for satellite signals. Uses a 22kHz signal superimposed to the remote supply voltage of the satellite dish.

FREQUENCY: Parameter that characterizes the radio-electrical wave. It is measured in “Hertz“. We usually use some multiples of this unit: kilohertz (kHz), megahertz (MHz), gigahertz (GHz).

ex.: At Saint Etienne (Guizay), the TF1 frequency is 583.25 MHz

FREQUENCY BAND: Continuous part of the hertzian spectrum with a specific assignment (telecommunications, television, internal security...)

Example: UHF band → 470 to 860MHz

FREQUENCY PLAN: There are various Frequency Plans according to places and standards. In the VISIOSAT field meters, the frequency plans are pre-programmed: they gather the most frequently used frequency bands.

GUARD INTERVAL: The guard interval is the time when the signal is not emitted: all signals carrying the same information but coming from different sources (various emitters or through multiple reflections) won't disturb each other.

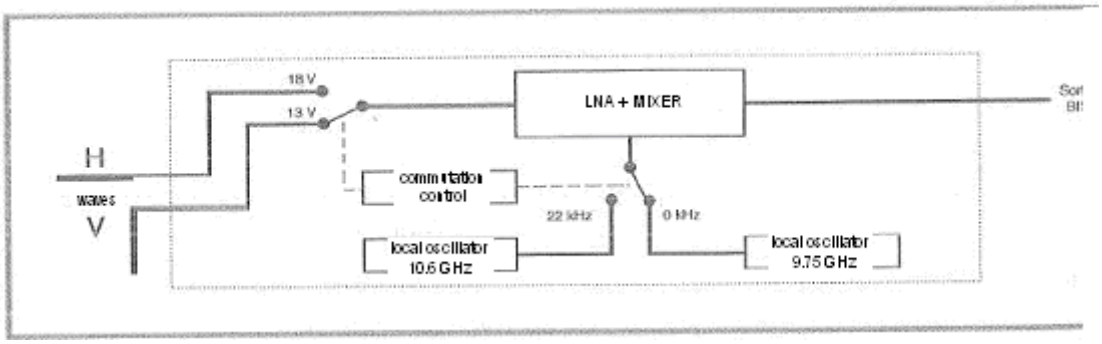
Value for DTT: 1/32 (28µs), that permits echoes lower than 8.4km

HIGH-DEFINITION TELEVISION:
In standard television, the number of lines of the picture ranges from 480 (NTSC) to 576 (PAL and SECAM). Each line is made of 720 pixels. In comparison to computer science, a television matches a SVGA 800 x 600 resolution. The proportion of the image is 4/3 (width / height ratio).
In HD television, the image is made of 1080 lines, each made of 1920 pixels – which means 2M pixels.
HD-ready TV sets have a 1280 x 720 minimal resolution
Full HD TV sets have a 1920 x 1080 minimal resolution

HP/LP: high/low priority → possibility to transmit 2 multiplexes under the same channel in digital format (ex.: in COFDM, we have a very robust high priority flow in QPSK; secondary flow in 16QAM)

ISOFREQUENCY: (or SFN: Single Frequency Network)
A DVB-T emitter network that emits on a whole region or a country at the same frequency.

→ risk of echoes outside the guard interval
→ moving reception



LNB: Low Noise Block-converter
A LNB (or universal head) is a standard converter for the analogical and digital reception of a satellite.

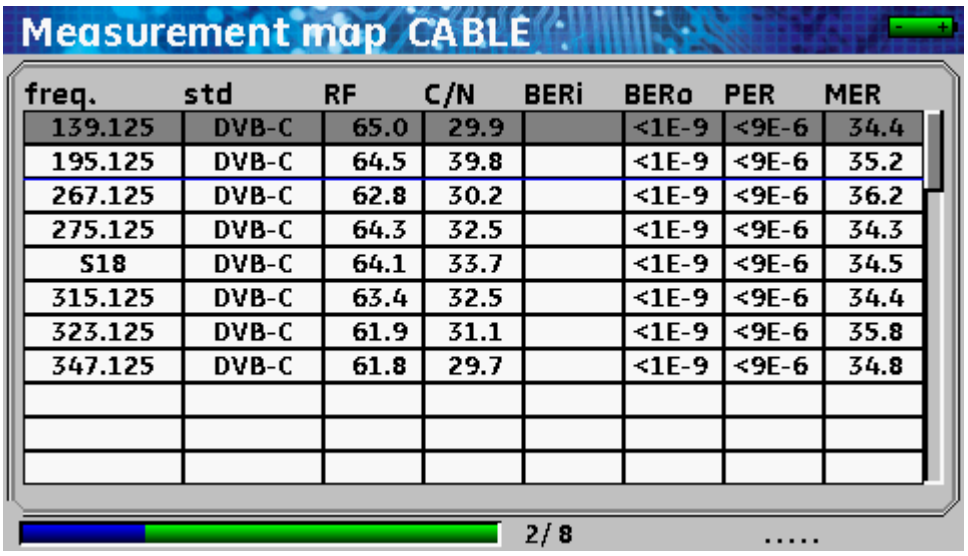
The reception is made on 2 low/high frequency band and 2 horizontal/vertical polarizations of the received wave.
The commutation of the band is made by a 13/18Volt voltage. The commutation of the polarization is made by a 22kHz signal superimposed to this voltage (you can also use the DiSEqC commutation for some LNB).

LDPC: Low Density Parity Checker
An algorithm used to correct errors in transmissions of digital satellite transmissions DVB-S2 signals.

NOISE MARGIN: Difference between the measured and the theoretical noise level before incorrigible errors.

Difference in dB between the measured C/N and the minimum C/N for error-free transmission.

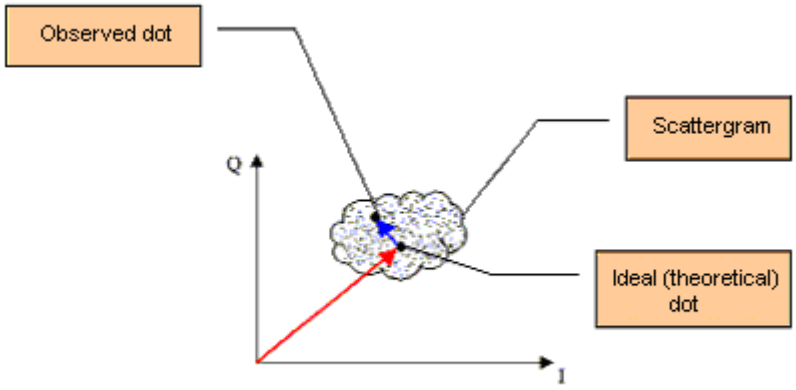
MEASUREMENT MAP: Enables the simultaneous view of the characteristics (frequency, channel, standard…) of several setups (TF1, France2…) with identification of values out of range. Enables measurements of level and BER for a setup list.



freq.	std	RF	C/N	BERi	BERo	PER	MER
139.125	DVB-C	65.0	29.9		<1E-9	<9E-6	34.4
195.125	DVB-C	64.5	39.8		<1E-9	<9E-6	35.2
267.125	DVB-C	62.8	30.2		<1E-9	<9E-6	36.2
275.125	DVB-C	64.3	32.5		<1E-9	<9E-6	34.3
S18	DVB-C	64.1	33.7		<1E-9	<9E-6	34.5
315.125	DVB-C	63.4	32.5		<1E-9	<9E-6	34.4
323.125	DVB-C	61.9	31.1		<1E-9	<9E-6	35.8
347.125	DVB-C	61.8	29.7		<1E-9	<9E-6	34.8

MER: Modulation Error Ratio

Ratio in dB measuring the distance between the theoretical dot and the observed dot on a constellation quarter. You can use it to control the reception: **the higher this value, the better the image**.



Error vector

Magnitude vector (from the reference dot to the ideal dot)

MODULATION: Once the signal has been coded, it is modulated with a carrier wave for transmission.

AM (Amplitude Modulation): analogical modulation of the amplitude of the carrier wave
FM (Frequency Modulation): analogical modulation of the frequency of the carrier wave
QPSK (Quadrature Phase Shift Keying): phase digital modulation
QAM (Quadrature Amplitude Modulation): phase and amplitude digital modulation
COFDM (Coded Orthogonal Frequency Division Multiplex): phase and amplitude digital modulation on multiple carrier waves; for DTT.

MPEG: Motion Picture Expert Group
MPEG is a family of compressed digital coding formats for audio / video. The aim of MPEG coding is to hugely reduce the amount of transmitted information with as little loss as possible thanks to very complex compression algorithms.

The MPEG 2 option on the VISIOSAT field meters allows you to view and control TV programs (coded under MPEG) directly on the meters.

ex.: On the Astra satellite, the EURONEWS and SPORT + channels are non-crypted and visible on the field meters.

MULTIPLEX: Set of channels broadcasted by the same operator (smaller set than a package). In DTT, a multiplex has a 24.5Mbits/s flowrate. A multiplex enables the diffusion of 6 programs in standard definition

NIT: Network Information Table – Information about the network/package
Enables the display of a description of the measured transponder. The information is sent non-coded in the data flow from the QAM, COFDM or QPSK decoder. The information items are:
- Name of the operator
- List of the transponders of the package
- Orbital position of the satellite (in Satellite mode).

OFFSET: The central frequency of a DTT channel may be shifted by ± 166.7 kHz in case of adjacent analogical channel to prevent disturbances

OL: A local oscillator that converts the frequency received from the satellite, in GHz, into an intermediary frequency that the demodulator can use, in MHz.

ex.: a 11.778 GHz frequency from the satellite passing through a 10.6 GHz OL LNB becomes a 11.778-10.600=1.178 MHz

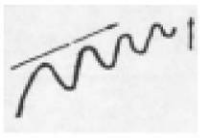
See LNB scheme.

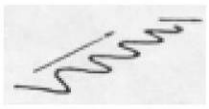
PACKAGE: Set of digital channels broadcasted and marketed by the same operator (TPS, Canal Satellite…)

AUDIO AND VIDEO PID: Packet Identifier. MPEG service information.
In the digital MPEG flow, the (audio or video) packets all include a PID to get binary data from each service.

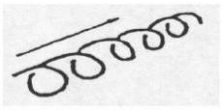
POLARIZATION: Polarization of a signal from the satellite. It can be either:

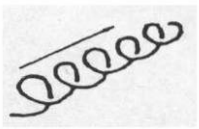
linearly polarized, horizontally or vertically:





Circularly polarized to the right or the left



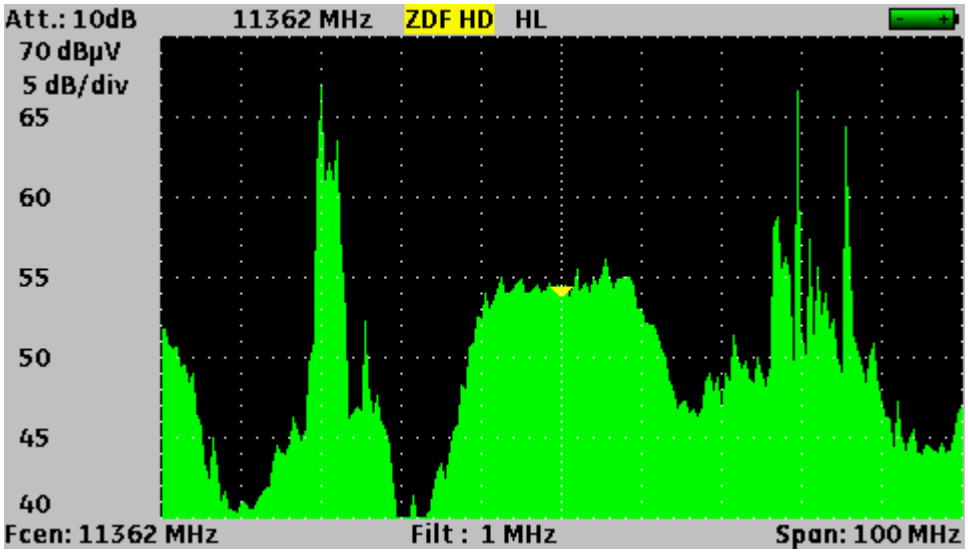


POSITIONER: A motorized system for the rotation of a satellite dish. Positioners are operated by DiSEqC commands

QPSK: Quadrature Phase Shift Keying (or 4PSK)
A kind of modulation mostly used for satellites.

REED-SOLOMON: An algorithm used to correct errors in digital transmissions

SPECTRAL ANALYSIS: Procedure to display to characteristics of a signal. This analysis has the advantage of showing the interference waves and the shape of the signal. Spectral analysis shows the amplitude-frequency curve.



STANDARD: Any norm that defines the characteristics of a modulation.
Analogical standards: L, BG, DK, etc.
Digital standards:
QPSK, 8PSK for **satellite television**
COFDM for **terrestrial digital television**

SYNCHRONIZING PULSE: A square signal showing the start of a frame or a line.

T-DMB: A digital broadcasting system based on the DAB.

This very robust broadcasting mode for mobile applications thanks to the modulation used (DQPSK=differential QPSK). Allows the reception of digital television but also of television programs on small-size appliances like mobile telephones or PDA

UNC: un-corrected packets

VIACCESS - MEDIAGUARD: Decryption systems used in Europe by many operators (TPS, Canal Satellite…). With the Viaccess and Mediaguard options in a VISIOSAT field meter and your subscription card, you will be able to view encrypted programs on the meter.

VITERBI: An algorithm used to correct errors in digital transmissions